ProCop 3.5 Monitoring and Visualisation System

ProCop 3.5

User's Guide

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Ostrava 2015

ProCop 3.5

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ALFA Mikrosystémy, s.r.o.

ProCop 3.5 Monitoring and Visualisation System is specialized software for monitoring technological processes, user management of technologies, archiving of historical trends, technological quantities and alarm states.
It includes experience from previous system versions, which began back in 1993, when the first predecessor of the current monitoring system was first deployed. Many years of experience in the field of monitoring technology, primarily in the heating industry, thanks to the experience and requests of customers and the system operators themselves, have helped us to develop the product which you now have in your hands.

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Printed: 2015

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1 Introduction

This manual describes the operation of monitoring parts for the visualisation system ProCop 3.5, which allows staff to monitor and operate the technological process using technological schemes (displays) 21, notify of alarm states and situations 51, trend values of quantities 39 in time, retain and transfer data for further processing and analysis, and more.

The specific job description is the contents of the so-called application (monitoring) project, the design of which is made using designer parts of the ProCop program. This forms a further, configuration part of the visualisation system ProCop 3.5. A description of the creation of a monitoring project is not included in this manual.

Since the ProCop system is created as an application for the Microsoft Windows environment, work with it requires basic knowledge of work in this operating system, primarily operation of the user interface. A description of this operation, however, is beyond the job of this publication. If necessary, you can find the information required in your reference manual and the Help for Microsoft Windows.

1.1 ProCop 3.5

ProCop 3.5 Monitoring and Visualisation System is divided into several collaborating parts. The user (client) part is called **ProCop Toolbar 3.5** 13 and brings together all the necessary tools for monitoring and visualisation of the technology 21, notification of alarm states, viewing alarms, events and system events 51, historical trends 39 and archives, their administration, administration of access rights 68 to the system and more. This manual will, from now on, only be concerned with this user part.

Tip!
ProCop Toolbar 3.5 13 *can be launched with the icon of the same name on the desktop, or by selecting it from Windows* Start ▸ ProCop 3.5 Monitoring and Visualisation System ▸ ProCop Toolbar 3.5.

ProCop Toolbar

Monitoring works without user login

Actual communication with industrial controllers, the collection and archiving of data, creation of historical trends and evaluation of alarm states and events is implemented using several **servers** for the ProCop monitoring system. These servers run as **services** in the background of the Windows operating system, and work, communicate and collect data even when there is no user logged in to the computer.

The ProCop Toolbar accesses **all communication with the user**, such as displaying data, alarms and trends, locally (on the same computer), or remotely (from another computer in a 100Mbps LAN network). If the ProCop Toolbar application is exited, monitoring continues, but the user does not see the realtime state and is not notified of newly arising alarm states.

Note
The ProCop Toolbar can be exited at any time and relaunched without losing any data. A computer with the ProCop monitoring system can be restarted at any time; it is set up implicitly to launch everything automatically. After the restart, there may be a short-term drop of data from the historical trends.

Main components of the ProCop monitoring system

For completeness let us introduce the basic components of the ProCop monitoring system. These components work together to collect technological data and alarms, their archiving and presentation to the user, whose access permissions

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are checked and verified according to the settings. Usually, all the components are located on a single monitoring computer, but there are cases, primarily for performance reasons, where several parts are divided and work together on a local network on several computers.

- A typical reason for dividing the monitoring application among several computers into the user and data parts is the simultaneous access by multiple users to the given visualisation. Using the ProCop Toolbar, it is possible to connect from the client computer to a remote data server on a local 100Mbps network, i.e. a **network workstation**.

Note
Remote access from network workstations is restricted by licensing conditions. Restrictions are calculated according to the number of simultaneously connected workstations, not applications installed. Licences can be shared amongst users.

We can divide the ProCop system into several parts:

- **ProDat data server**
  The data server provides communication with individual controllers and renewal of technological variables. It checks alarm states of technological variables and sends alarm reports to the alarm server, implements archiving of selected technological variables on the trend server. Contains a list of visual designs, which, however, it does not interpret, it only provides them for user consoles.
- **ProAlarm alarm server**
  Archives the alarms, events and system events received in the appropriate files. It provides a list of alarm reports to the user interface.
- **ProTrend trend server**
  Archives values of selected technological variables in the appropriate trend files. It provides data of historical trends to the user interface.
- **ProAcs access permissions server**
  Administers user lists, user groups and their access permissions. It implements authorisation of access to individual parts of the monitoring system.
- **ProCop toolbar**
  The main user console, which serves as access to individual parts for monitoring from administration of data, alarm, trend server and the access permission server to viewing displays, alarms and trends. Entry/exit modules allow the ProCop system to be connected to various technical media (type of programmable automatic machines, controllers, etc.) and to communicate with them.

1.2 Program Software Requirements

ProCop 3.5 Monitoring and Visualisation System is a suite of object-oriented programs, which was created as the original application for the Microsoft Windows operating system. Currently, Windows XP, Windows 2000 Server and Windows 2003 Server, from ProCop 3.2 Windows Vista Business and Ultimate, and from ProCop 3.3, Windows 7 Professional and Ultimate, and Windows 2008 R2 Server are supported.

When we speak about the Windows operating system or environment, due to the similar or same method of work in the environments mentioned, we mean any of the options given, unless explicitly stated otherwise.

1.2.1 Locale

In order to avoid problems with locales, concerning screen and print fonts, system reports, dialogues, captions and help, we recommend working with the corresponding localised (EN) versions of the operating system.

Language versions ProCop 3.5

Currently, there are other language versions of the ProCop 3.5 application also available, such as English and from version 3.3 also a Slovak version. You can check which languages the system has been translated into with the system manufacturer or on the website http://www.alfamik.cz.

1.2.2 Cooperation with other programs

The Windows environment is designed for applications to run in parallel. It therefore provides users with much more opportunities in regard to tasks working with each other in collaboration, data exchange, or usage of joint system resources, such as computing performance, memory, etc. Sharing computer resources, however, puts greater demand on the correct running of tasks and their seamless integration. In the event of an error, some applications tasks may cause conflicts or even other tasks to collapse.

To make it possible to ensure the reliable and correct functioning of the ProCop monitoring system, it is **appropriate** to

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use the monitoring computer **exclusively** for this program only. If you do not keep to this condition, it is not possible to guarantee the flawless running of the ProCop system due to possible overload and disruption of the system integrity by other tasks.

If using other communications software, conflicts when accessing individual communications devices (COM ports, LON, modem, etc.) are also possible.

1.3 Installation of the ProCop System

If ProCop 3.5 Monitoring and Visualisation System is not yet installed on the computer, just insert the installation CD in the CD/DVD drive and wait for the installation to launch. Any request for an automatic launch should be confirmed. If the installation program does not launch on its own, open Windows Explorer and find the folder ProCop ▸ System on the CD/DVD drive, and launch Setup.exe. Continue according to the instructions in the installation program.

If for any reason (e.g. accidentally erased or corrupted files on the drive, etc.) the ProCop monitoring system needs reinstalling, just open the Control Panels, using Start ▸ Control Panel. In the window of the Control Panel shown select Programs ▸ (Add or remove programs for XP). In the list select the row Monitoring system ProCop 3.5 and click Uninstall or change (Change or remove in Windows XP). In the menu that appears select Repair/ Reinstall new version. Continue according to the instructions in the installation program.

Note

If it is also necessary to install the monitoring project, just copy the Project folder using Explorer from the CD/DVD drive to the C or D hard drive. This will only need to be done when installing to a clean computer, to which the project has not yet been copied. In the application ProCop Toolbar 3.5 just select Open in the advanced menu 15 *and select the appropriate file in the Project directory on the hard drive, or restart the computer. See Working on a project* 17.

Installation procedure

After launching the installation program on a computer that has not had the monitoring system installed on it previously, these steps will occur:

- **Information about the customer** - It is necessary to enter information about the user and the company that will be using the monitoring system and leave the option to install for all users.
- **Type of installation** - Selection of the type of installation allows the system to install in different operating modes, as is explained in more detail in the sub-chapter Type of installation 9. The installation procedure can vary according to the type chosen.
- **Destination folder** - The monitoring system can be installed in a selected hard drive folder. It is convenient to leave the predefined one.
- Various options according to type of installation 9.
- **Installation and restart** - After setting the parameters the actual installation will run and if necessary you will be asked to restart the computer.

Note

If the installation requires the computer to be restarted, this option will be offered automatically. If you choose not to restart the computer, you may find that some parts of the system do not work correctly until a restart is done.

1.3.1 Installation type

Given the multiple possible uses of the monitoring system, the installation program allows you to select the installation type. In relation to this, depending on the selected installation type, further required settings and parameters can be required.

Installation types, related settings:

- **A) Standard monitoring**
  Installs ProCop as the main monitoring system with a hardware key, to which the necessary communications channels are brought. This installation is also utilised for branch control centres via a slow communications line with its own hardware key. Upon selection of the installation folder, an identity request is made (the user) to know who the monitoring system is to be working with:
  - **Username** - If the username does not exist in the domain entered below, it will be created, if sufficient permissions are available.
  - **Password** - The user will be authenticated by entering a password (Windows); if the user does not

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exist, it will be created with the password entered. If the field is left blank, the system will generate a very complex password that will never be published, which is not needed (recommended option).

- **Domain** - The user domain shall remain unchanged for the local user. If we use a previously created account of the domain user, we enter the appropriate domain.

- **B) Network workstations**
  The installation type for simple network workstations connected to the main control centre via a fast LAN at least 100Mb). After selecting the installation folder, you must enter (or confirm):
  - **User identity** - The username and password must match, as when installing standard monitoring at the main control centre; in the event of the domain user the domain name should also match. If there has been no interference with the identity when installing the main control centre, even with installation of a network workstation it is enough to leave the default values and a blank password.
  - **Network name, or static IP address** - A further required option when installing a network workstation is entering the network name of the computer at the main control centre, or its IP address. This of course must be static - it cannot be changed..
- **C) Web server**
  This option installs monitoring for publishing monitored data using a web server. Installation is the same as in version A, Standard monitoring, expanded to include the parts needed for publishing on the web and configuration of the web server. The web server must be installed in the computer prior to the ProCop Monitoring System.
- **D) Developers**
  Practical configuration for project developers is offered by this installation. For example, automatic launching is not implemented when the computer starts, and the system runs without the identity of the user who launches it, etc.
- **E) User installation**
  The user selects installation of individual components and system settings. We only recommend using this in the event of detailed knowledge of the system or after consultation with the manufacturer. Incorrect choices may result in failure of the monitoring, or non-functioning of some subsystems. After selecting the installation folder, you must enter (or confirm):
  - **Installed components of the monitoring system** - The system component tree allows users to choose which parts of the monitoring system, input-output modules, tools, examples, documentation and advanced options will be installed.
  - **Program folder in the Start menu** - Users can select in which folder on the Start menu the shortcuts will be located for launching the ProCop Monitoring System and various tools.
  - **User identity** - The username and password must match, as when installing standard monitoring at the main control centre; in the event of the domain user the domain name should also match. If there has been no interference with the identity when installing the main control centre, even with installation of a network workstation it is enough to leave the default values and a blank password.
  - **Installation of drivers and adaptation for Windows** - The final steps prior to the actual installation is the selection of installation of hardware key drivers, user manufacturing, registration and settings of components and services, configuration of Windows and the web server. Only the events that have been selected will be implemented. During configuration changes, it may lead to non-functioning of the whole monitoring system or parts and functions within it.

Note
*For applications with **OPC** (server/client), **E) User installation** must be selected and installation of OPC components ticked. If support for web monitoring is not necessary, it is advisable to deselect the components..*

1.3.2 Lowering ProCop user privileges

ProCop 3.5 Monitoring and Visualisation System runs after default installation with the identity of the locally created ProCop user, who is assigned administrator permissions within the local computer. The user's password is machine generated by default, extremely complex and not published.

The need may arise where it is necessary to restrict permissions even to this user. This is possible assuming that certain manual settings are fulfilled. We explicitly grant read and write permissions to the ProCop user for the following files and folders, including subfolders:

C:\PDOXUSRS.NET - or the entire **C:\BDE** directory

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- **C:\ProCop 3.5** - or other folder where the system is installed
- **C:\Projekt** - or other folder where the monitoring project has been copied

In the administration of users and groups, it is possible to remove **ProCop** users' membership of the Administrators group and add membership to the **Users** group.

After these settings are implemented, the computer must be restarted and the correct functioning of the entire monitoring system checked.

Important warning!
For adjustment of user permissions, it is necessary to have administrator permissions for the computer and sufficient knowledge of the issue. Mis-setting permissions can result in entirely non-functional monitoring.

After each change of this type, we recommend restarting the computer and re-checking the required system functionality.

1.4 Uninstalling the ProCop System

ProCop 3.5 Monitoring and Visualisation System can be uninstalled using Start ▸ Control Panel. In the window of the Control Panel shown select Programs ▸ Remove program (Add or remove programs for XP). In the list select the row Monitoring system ProCop 3.5 and select Remove program (Add/ Remove for XP). In the menu that appears select Remove. Continue according to the instructions in the installation program.

When uninstalling, files and directories are gradually removed that were created on the drive during installation. Shortcuts and registration database entries are also removed.

If it is also necessary to remove the monitoring project and collected data, just remove the Project folder in Explorer from the hard drive (C or D). It is also possible to remove the installation package C:\Program Files\ProCop 3.5 Install Files.

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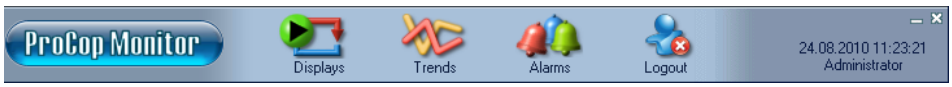
2 ProCop Toolbar

The ProCop Toolbar is a client application combining an environment for creating and editing a monitoring project (Designer) with an environment for the operating part of a monitoring and visualization system (Monitor). The ProCop Toolbar can switch between these two modes.

Monitor mode 13



The operating part allows staff to monitor and manage the technological process via technological schemes (displays) 21, notify of alarm states and situations, view and process alarm lists 51 and view and analyse historical trends 39 of technological quantities.

Switching from Designer to Monitor modes can be done by selecting View ▸ Monitor, or pressing Ctrl+Alt+M.

Designer mode

The developers' part of the monitoring system provides access to the project editor and alarm server, administration of the server for access permissions, etc.

Switching from Monitor to Designer modes can be done by selecting View ▸ Designer from the advanced menu 15, or pressing Ctrl+Alt+D.

2.1 Description of Toolbar Functions

The environment of the actual ProCop application in the monitoring mode is very simple. It is made up of just the toolbar at the top of the screen. This panel allows access to individual parts of the monitoring system. Displaying individual buttons can be selected according to need.

Meanings of ProCop Toolbar buttons

The ProCop Toolbar displays buttons for quick access. By right-clicking certain buttons or selecting Special ▸ Buttons any of the following buttons can be displayed or hidden:

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	Advanced Menu 15	*Keyboard shortcut*	
Displays	View ▸ Displays Display Browser 21	ALT+D	Shows displays of the display technologies using technological schemes with listed current values of quantities, symbols expressing technology states, etc.
Trends	View ▸ Trends Trend Browser 39	ALT+T	Shows a window of historical trends. Trends for selected technological quantities. Can be shown in both table format and clear linear graphs.
Alarms	View ▸ Alarms Alarm Browser 51	ALT+A	Shows alarms, events and system events. In the window showing alarms it is possible to implement confirmation, deletion and filtration of alarms according to a whole variety of criteria.
Module control	View ▸ Module control Module Control 59	ALT+M	Shows the window for module control. The module control window allows you to stop, start and set parameters for separate communications modules in the monitoring system.
Calculator	View ▸ Calculator Calculator 61	ALT+K	Shows the window for the calculator. The calculator is for evaluating numerical expressions in a way users know from table calculators.
Login Logout	Access rights ▸ Login Access Permissions 67 Access rights ▸ Logout	ALT+L CTRL+ALT+L	User login. The name of the currently user is always displayed in the notification field of the ProCop Toolbar. Logout of the current user. After logging out, a pseudo-user "Everyone" is automatically logged in with minimum access rights.
Permission	View ▸ Permission management Permission Management 67	CTRL+ALT+R	Shows administration of access permissions. Allows administration of lists of users, groups and their access permissions.
Full screen	Special ▸ Full screen	F11	Shows the active window in full screen mode. You can exit this mode only by pressing the F11 key.
Help	Help ▸ Help	F1	Shows the help for the ProCop monitoring system. The contents of this help correspond to this user manual.
Exit	Exit	ALT+F4	Exits the "ProCop Toolbar" application.

Button selection

Implement selection of buttons in the taskbar by right-clicking the mouse on any button (e.g. "Displays") and in the local menu select the button you want to continue displaying or hide.

Toolbar notification area

The ProCop Toolbar contains a notification area on the right-hand side in monitoring mode. The following indicators, which express the state of certain parts of the system and possess the following functions, are located in this notification area:

- **Icons to minimise and exit** - in the top right-hand corner there are icons to minimise the Toolbar and exit the toolbar 19 (this does not end communication or data collection, it only closes the user interface).
- **Bells for unaccepted alarms and events** - if there are any new, as yet unaccepted alarms or events, red and green bell symbols appear in the notification area. By clicking on the bell, the Alarm browser 51 appears. After confirmation 53 of all alarms/events, the appropriate bell disappears.

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- **System date and time** - the current date and time of the local computer is displayed in the notification field.
- **Logged-in user** 67 - the name of the user currently logged in to the ProCop monitoring system is displayed under the date and time.

Accessing the advanced menu

Given that the main menu in the taskbar is freely configurable and does not contain all the functions from the monitoring mode, it is possible to right-click in the left part of the taskbar to access the advanced menu 15.

Using this advanced menu, it is possible to connect to any data server, or to open or close the required monitoring project, change the appearance of toolbars and select other functions which are not part of the main menu.
You can access the ProCop Toolbar advanced menu by right-clicking the mouse anywhere in the toolbar except on buttons.

Note
The specific job of the monitoring system is the contents of the application (monitoring) project, which is obtained as output of the designer part of the ProCop application. However, knowledge of the design part of the ProCop application is not necessary for work with the monitoring part of the system.

2.2 Advanced Menu

Given that the main menu in the taskbar is freely configurable and does not contain all the functions from the monitoring mode, it is possible to right-click in the left part of the taskbar to enable the advanced menu. This menu provides access to functions that are not included in the main menu on the taskbar.

Note
The menu may provide only certain functions, for simplicity - it depends on the system settings and user permissions.

Connect

Using the menu Connect you can connect to the data server on the local computer. The data server 7 is an operative part which interprets the data part of the monitoring project and provides a visual project of the user console.

Connect remotely...

It is also possible to connect to the data server 7 remotely, using the option Connect remotely.

Disconnect

You can disconnect from the given server with the Disconnect option on the ProCop Toolbar.

Open...

This option opens or closes the monitoring project on the data server to which ProCop is connected. If other users are connected to the data server at that moment, the opening or closing project appears on all connected user consoles.

Archive

With this option, or the keyboard shortcut CTRL+ALT+B, you can open the tool for project archiving. It is possible to archive an open project or other selected project. In the middle part, there are options on the left for source files for archiving (it is a good idea to leave them all selected), and on the right there are options for data, alarm trends and external files. Alarms and trends cannot be archived while the project is running. At the bottom, there is an actual list of archived files. By pressing Archive archiving is implemented in the default directory, while the button Archive as allows you to select the target for archiving.

View

Home - displays the browser of technological displays and switches to the main display

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Displays - displays the browser of technological displays

Trends - displays the trend browser

Alarms - displays the alarm browser

Module control - displays module control

Calculator - displays the calculator

Permission management - displays the console for the access rights server

Trend management - displays the console for the historical trends server

Alarm management - displays the console for the alarm server, events and system logging

System tracer - launches the application for monitoring the running of the ProCop system

Advanced mode - switches the ProCop Toolbar to separate windows mode, and can display several browsers and consoles at the same time

Designer - switches ProCop Toolbar to Designer mode - requires designer permissions

... - a list of currently opened windows is also displayed, in the Advanced mode CTRL+ALT+X allows to switch windows

Access rights

Login - opens a dialogue window for the user login

Logout - logs out the user currently logged in

Change password - opens a dialogue window for changing the password of any user

Special

Options - opens the settings of all the installed parts of the ProCop monitoring system, requiring ProCop Options rights

View - shows the ProCop Toolbar selection view

Buttons - shows the list of buttons on the ProCop Toolbar and allows them to be displayed or hidden

Full screen - shows the current browser in full screen; to return to the original view, press F11

Tile verticaly - organises windows (only in expert or Designer modes)

Help

Allows you to display and search the help. The final option is information about the manufacturer and program version.

Connect network printers

If you use printers directly connected to a local computer, you must secure access of ProCop users for printing on the necessary printers. After installation, users are authorised to print on local printers, as long as they do not have lower permissions, then access to printers in printer security must be permitted to ProCop users.

If it is necessary to print on a network printer, it is necessary to search for these network printers using the option Connect network printers and by entering the appropriate network permissions allow the ProCop users on these printers. If the printer is not displayed in the list, the full printer name must be filled in via the input window, usually in the format

```
\\server\printer
```

Printer setup

By selecting Printer setup it is possible to select the printer used for printing and set up its parameters. Printing switches automatically from portrait to landscape depending on which part of the system is being printed. These parameters can be set when printing specific output.

If the operating system reports that a default printer has not been set, you must assign permissions to the ProCop user for printing on local printers, or connect a network printer with the appropriate network permissions.

List of previously opened projects

In this part of the menu a list of several of the last opened projects is displayed. This list automatically updates according to when the projects were last opened or if they still exist.

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Exit

Closes ProCop Toolbar - monitoring does not finish this way, it continues on the servers, which work as operating system services. However, no information is available for users. Monitoring can be finished either in Designer mode or by stopping the relevant services.

Exiting ProCop Toolbar requires "ProCop Exit" permissions and can also be implemented with the cross in the top right-hand corner of the toolbar, or with the Exit button on the toolbar, if displayed.

2.3 Changing the Toolbar Appearance

The appearance of the toolbar can be changed depending on user requirements. In the various operating systems, the appearance differs in colour, to correspond with the style of the operating system.

Functions available from the toolbar

Out of the range of all functions that can be displayed in the toolbar, it is only possible to select those users need for their work. The selection of the functions displayed can be done by right-clicking the mouse on any icon, or from the advanced menu 15 by selecting Special ▸ Buttons. In the list displayed, only tick the buttons which are to be displayed in the toolbar.

Toolbar background appearance

The ProCop Toolbar application allows various backgrounds to be set for the toolbar in Monitor mode 13. The image with the background must be saved as a Windows Bitmap (bmp) file. Several predefined toolbar views are saved in the directory ProCop 3.5 ▸ Skins. More competent users can create the own background image with the same dimensions and resolution in any image editor by adapting any of the predefined views.

Changing the view can be done in the advanced menu 15 by selecting Special ▸ View. In the submenu displayed, just select one of the files of views offered and the toolbars will immediately change.

Advanced mode

In normal display mode, separate windows to view displays, trends, alarms, etc. are displayed across the entire remaining free space of the screen. In this mode it is therefore impossible to have several windows displayed at the same time.

When switching the mode in the expanded menu 15 from View ▸ Advanced mode, or using the keyboard shortcut Ctrl+Alt+X the window being viewed is closed and the windows that are then opened in the display, alarm, trend browsers, etc. behave as standard windows in the Windows operating system, so you can handle them in any way, i.e. change the position and size, cover them by each other, move to another monitor, etc.

2.4 Connecting to a Data Server

So that ProCop Toolbar can make separate parts of the monitoring system available, it must be connected to a data server 7. This data server provides the ProCop Toolbar the appropriate visual project. If the data project is launched in the data server, the current values of technological quantities are displayed in the visual project and the dynamic elements correspond to the state according to the current technological values.

The data server may run on the same computer as the user console (local data server), or on any of the computers in the local computer network (remote data server – **network workstation**). For connection to a local data server go to the option in the advanced menu 15 Connect. For connection to a remote data server there is the option Connect remotely..., which requires the name of the computer with the remote data server to be entered.

Disconnecting from the data server can be done using the option from the advanced menu 15 Disconnect. Disconnecting from the data server does not cause the data server to stop running. The data server remains in operation and continues to provide all monitoring functions from data collection to archiving of historical trends, to evaluating alarm states and sending them to the alarm server.

2.5 Working on a Project

The specific job of the monitoring system is part of the monitoring project. This project must be opened on the data server to which we connect. Opening the project is possible from the ProCop Toolbar by selecting Open from the

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advanced menu 15.

Note
Closing the project is only possible if the user logged in has been assigned the right to exit monitoring. If the staff member does not have this right, the system does not allow the project to close.

2.6 Project Archiving

Project archiving can be done in the advanced menu 15 by selecting Archive, or at any time with the keyboard shortcut CTRL+ALT+B.

A dialogue window will open with the preset of the currently open project and automatic inspection of the project is implemented with a search of files for archiving.

Dialogue window for project archiving

After opening the dialogue window, analysis of the currently selected project and a search of all files selected for archiving is implemented automatically. If it is necessary to archive a project other than the open one, it is necessary to switch the project selection switch and find the required project for archiving.

A note is automatically attached to the archive with the optional path for default project expansion.

Archiving is done in a folder with the project name, by the connected archiving date (optional) to the selected directory.

Tip!

Using the Browse *button it is possible to simply select the appropriate path or file.*

In the dialogue window, the separate parts of the project can be selected for archiving. The left part of the options is for selecting the source files for the project. The right part contains the files with collected data, which is not necessary to archive in this way, and they are usually quite large. After changing the selection it is necessary to refresh the file list by pressing the Update button.

A full list of archived files is displayed below, and using the buttons Insert, Remove and Delete all it is possible to modify this list according to need.

Using the Archive button, archiving into the default directory is launched. The Archive as... button allows the archive to be saved according to the following file selection. The archive is a standard compressed ZIP file.

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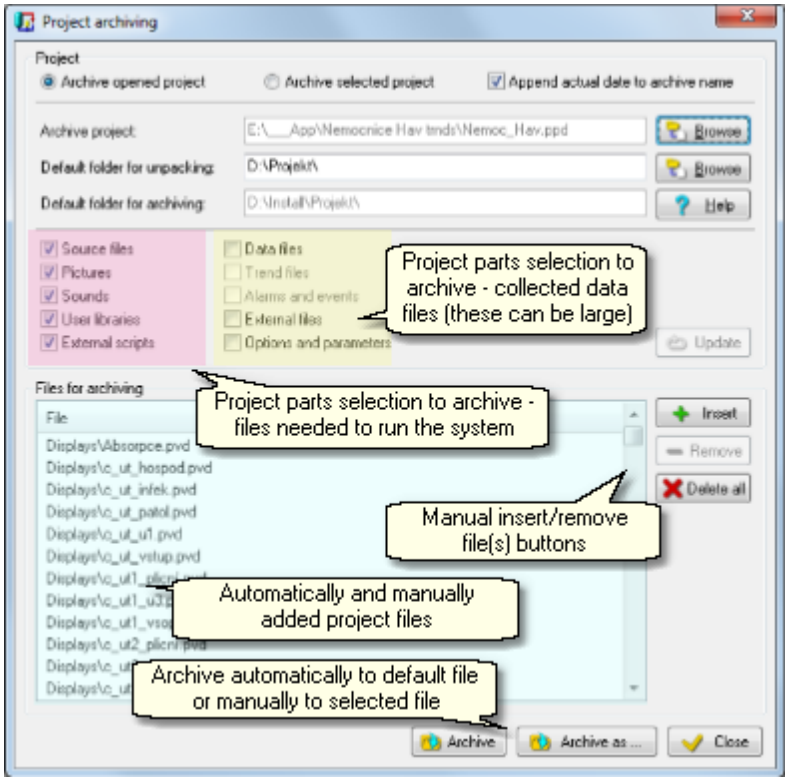
Dialogue window for project archiving



Tip!
By default, archiving is set so that after opening the dialogue window, you just press the button Archive. *Upon completion of the archiving, just close the dialogue by pressing* Close.

2.7 Stopping Work with the Program

If you want to stop work with the monitoring program, use the usual combination Alt+F4 to end a program in Windows, or select Exit from the advanced menu [15].

ProCop Toolbar can also be exited by pressing the optional button Exit, or the cross button in the top right-hand corner of the Toolbar.

Note
Exiting the ProCop Toolbar application does not stop the data server from running The data server remains in operation and continues to provide all monitoring functions from data collection to archiving of historical trends, to evaluating alarm states and sending them to the alarm server.

2.8 Designer Mode

Designer mode is designed to create and edit the monitoring project. In Designer mode, all the functions we know from Monitor mode are available, along with functions available in this mode that are necessary for editing the database of variables, displays, alarms, historical trends, etc. The description of the designer part of the ProCop monitoring system is not however necessary for monitoring needs so is not included in this documentation.

Note
To enter Designer mode, it is necessary to have sufficient access permissions, specifically "Visual Designer" permissions.

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3 Display Browser

This part describes the control of the browser for technological displays. The display browser is part of the ProCop Toolbar, which simply and clearly makes the functions of the monitoring and visualisation system accessible. The display browser allows staff to monitor and control the technological process using technological schemes (displays). The specific list and appearance of displays is defined in the visual project.

The display browser can be opened by pressing the button Displays, or in the advanced menu 15 by selecting View ▸ Displays. Trends can also be enabled at any time using the keyboard shortcut ALT+D

The display browser allows staff to monitor and control the technological process using technological schemes (displays).

Note

A specific list and the appearance of displays is defined in the monitoring project in designer mode. This forms a configuration part of the ProCop visualisation system. However, working on the program in monitoring mode does not require knowledge of this designer part.

3.1 Description of the Display Browser Window

The display browser window is made up of toolbars and the window desktop. The window desktop displays the currently selected technological display, and its appearance therefore depends on the specific monitoring project. Above the window desktop is a toolbar. The display browser toolbar contains controls necessary to browse the displays.

Navigation and technological display print buttons

Browsing displays is possible in various ways

- The Home button always displays the first main display of the whole technological project
- The simplest and quickest way is to browse the displays using the buttons Previous 21, Next 21, Master 21 and Slave 21. Using these button, it is usually possible to display all the monitoring project displays one by one.
- Separate displays are organized in a tree list. This display tree can be displayed via the item Display list 22. By selecting display from the list you can view the selected display.
- When browsing displays, the displays viewed are saved in the history of displays visited 22. Using the Previous and Forward buttons, you can browse and view separate displays one by one from the history of displays visited.

Tip!

Turning the mouse wheel browses the displays in the same way as the Previous and Next buttons on the toolbar.

3.1.1 Buttons for browsing displays

After selecting the Home button or the keyboard shortcut CTRL+Home the monitoring project homepage is displayed. This is the display in the display tree as first.

Displays are organised in a tree list. Using the buttons Previous, Next, Master and Slave you can browse this tree and view all the monitoring project displays one by one.

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Keyboard shortcuts for movement between displays are based on the cursor arrows on the appropriate buttons. For movement in the tree the following combinations are available Ctrl+Home, Ctrl+←, Ctrl+→, Ctrl+↑ and Ctrl+↓.

To move in the history, there are the combination keyboard shortcuts Alt+← and Alt+→.

Note

When browsing the tree on several levels, the method of browsing using the buttons Previous, Next, Master *and* Slave *is governed by the type of connection settings for the given group of displays. The method of browsing depends on the specific visualisation project.*

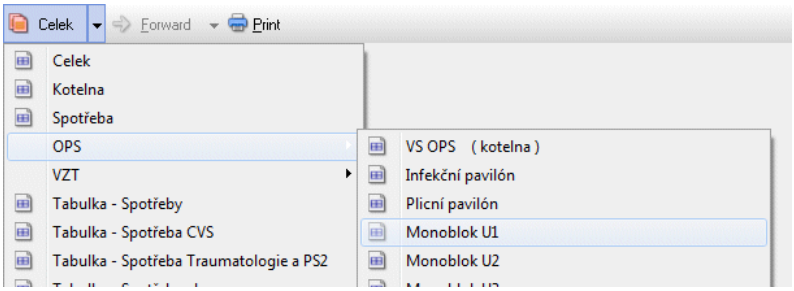
3.1.2 List of displays

Displays are organised in a tree list. The whole displays tree can be viewed using the item List of displays. By selecting the display in the list of displays the given display is shown.

In the list of displays, the level of integration 22 of the group of displays is shown simultaneously.

- group without interconnections
- group with interconnection of the first display
- group with interconnection of all displays

Example of two-level tree of displays



Note

A multi-level tree architecture is usually only used for large control centres with many substations, which links the levels geographically, or using other organisational structures.

3.1.3 History of displays visited

When browsing displays, the displays shown are saved to the history of displays visited. Using the button Back you can return to the previous display in the display history at any time. The button Forward allows us to go through this history forward to the latest visited displays. The whole history of visited displays in the given direction can be viewed by pressing the cursor for the appropriate button; clicking the appropriate display from the history shows the given display.

Tip!

History is useful particularly in order to go back to a display quickly from which you switched using a button or a field (e.g. map) in a technological display.

3.1.4 Interconnecting groups of displays

Displays are organised in a tree list. Each group of displays has a defined level of integration. The level of integration of the group of displays is determined in the design of the visual project in Designer mode. The level of integration can be thought of as the number of displays from the given group, which is displayed when browsing displays in the parent group.

Displays without connecting to other groups of displays

A group of displays can be separated from the others. When browsing displays of a parent group using the buttons Previous, Next etc. it is not possible to get to this separate group of displays. The only way of getting to the browsing mode for this separated group of displays is by showing a display form this group using the list of displays, or via a link to this display from another display of the monitoring project. Again, from such a group, it is not possible to go

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between other displays other than by a link or selecting it in the displays tree.

Connecting the first display to the parent group

The first display of this group will be displayed, when browsing with the buttons Previous and Next, in the parent group. If when showing this display you press the button Slave, the second display of this nested group is shown. From this moment, you can browse all the displays of this nested group using the buttons Next and Previous. You can get back to the parent group of displays by pressing the button Master. After pressing this button the first display of this group is shown again and using the buttons Previous and Next you can browse through the displays of the parent group.

Connecting all displays to the parent group

All the displays in the group are shown within the parent group. The group therefore does not have any impact on the sequence of browsing displays and is only here for increased clarity or logical grouping of several related displays.

Note
The order of the displays is part of the specific technological project and cannot be changed by the user.

3.1.5 Dialogue technological display

Some technologies or their parts are usually displayed in a dialogue window. An example of this is detailed information on individual parts of the technology, such as thermometers, queries for the user, information dialogue windows, windows with incoming SMS messages, user parameters for communication and the like.

It is necessary to close this kind of window prior to displaying another technological display, or other monitoring parts, with the Cross, or by pressing the button Close. The Print button allows the dialogue technological display to be printed.

Note
Buttons may be hidden in relation to visualisation needs and replaced with buttons within the display.

3.2 Technological Schemes

The basis of technology monitoring is the technology scheme with printing of current values of technological quantities, with measuring devices, symbols expressing the states of the technology, etc. The specific scheme and the graphic implementation depend on the specific application and the given technological project. The technological displays may also contain photographs of objects, overview maps, tables of values, etc.

Important warning!
From now on, only general practices will be given which are used in the majority of cases when creating specific projects. Scheme can be entirely different in regard to layout, colours and meanings depending on the specific technological project. It is then necessary to request documentation and an explanation from the specific project creator.

Layout of the technological scheme

Areas of technological screens:

- **Title** - name of control centre, station name - two left fields at the top of the screen.
- **Date and time in the controller** - shows the date and time in the industrial controller (during the last refresh of values), can be); it is possible to set date and time setting dialogue 32 with a simple click.
- **Communication with the controller** - displays the date and time of the last refresh of values - communication with the controller, values on the technological screen are from this time. Clicking on the communication state makes it possible to launch communication outside of the regular period or change the refresh type 59. It can display the fault (red) state of communication - it is not possible to connect with the controller and obtain or set data. The problem is probably in the connection between the control centre and the controller.
- **Fault area** - displays faults which indicates the industrial controller. Usually related and general faults are indicated here. Aggregate faults are displayed directly in the scheme.

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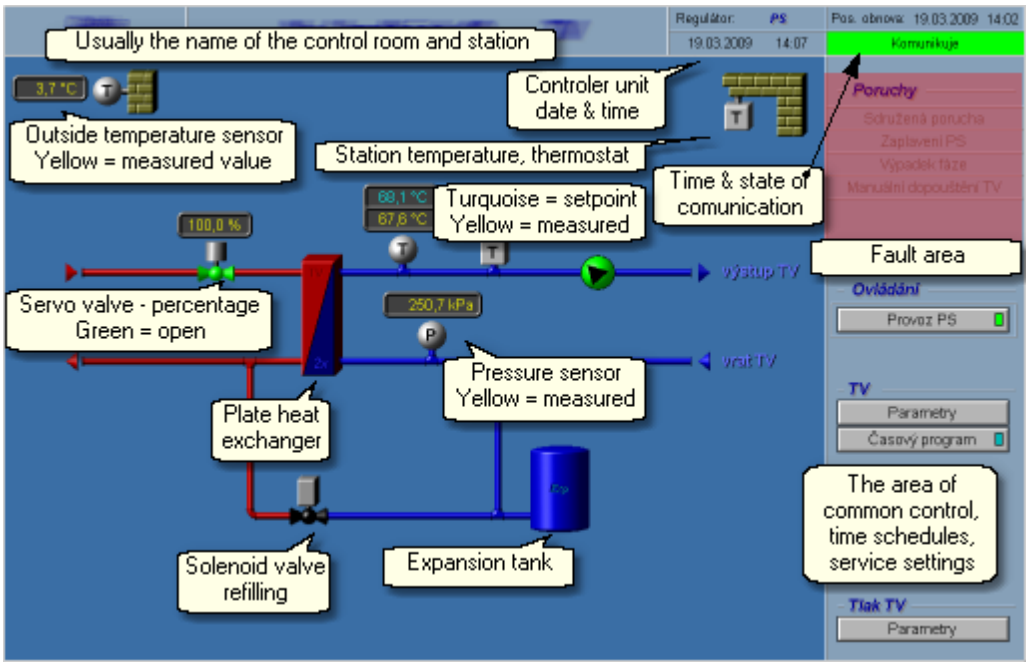
- **Common control area** - contains control buttons for setting common operating modes, time programs and various regulation parameters. Individual aggregates can have their own controls and settings directly in the technological scheme.
- **Technological scheme** - displays the schematic diagram of a specific technology. Typically it displays the scheme for pipe connections, ventilation pipes, rooms, pools, reservoirs and other equipment. The scheme typically includes sensor symbols, which display the values measured, indicators of the setpoints and corrections. On the pipes, servo-valves, solenoids and pumps are displayed, while on the ventilation pipes, fans, valves and other ventilating components are displayed. All these components can be made dynamic - their appearance can change according to the specific real-time state. Behaviour of components will be described in detail in the following subchapters. It is possible to have service control or setting, confirmation of faults, etc. for individual components.

Regular technological scheme with typical layout


Usually the name of the control room and station
Controler unit date & time
Outside temperature sensor Yellow = measured value
Station temperature, thermostat
Time & state of comunication
Turquoise = setpoint Yellow = measured
Fault area
Servo valve - percentage Green = open
Pressure sensor Yellow = measured
Plate heat exchanger
Solenoid valve refilling
Expansion tank
The area of common control, time schedules, service settings

Tip!

The mouse curser with the arrow symbol changes to a hand symbol over the areas that allow some kind of action to be made. With a single or double left or right click of the mouse (depending on the specific application), you can, for example, open settings dialogue 31, open the local menu 36, switch displays 37, etc.

Important warning!

The ProCop monitoring and visualisation system displays values and states obtained from autonomous industrial controllers. The specific behaviour of technology and regulation is dependent on the software of the controller software itself, not the visualisation. This only shows the technological data of the scanned controllers and allows their parameters to be set in a convenient way. Any unreliable states and faults must first be verified in reality and in the controller diagnostics (floating or fixed control panels).

3.2.1 Statements of values, text colours, sensors

Technological schemes are made up of active and passive elements. Passive elements, such as pipes (steam, water, gas, ventilation, etc.), walls, rooms, arrows, as well as manual valves or manually operated pumps, do not change their properties (colour, position, visibility) and only indicate the technology. Pipes, heat exchangers and arrows are in various colours. Non-managed pumps, valves and other aggregates are in grey-black.

Active technology elements and their usual schematic representation follows.

Measured values, setpoints and corrections

Sensors of measured values are usually displayed according to the schematic markings with a symbol value in a circle or globe. Next to it is a value indicator.

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Meanings of colours of letters for value indicators:

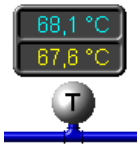
- **Grey** = **Invalid** value
  Value which is too old or unreliable.

Sensor of outside temperature, invalid:

Position of servo valve:

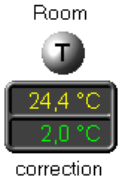
- **Yellow** = **Measured** value
  Valid real value from technology, reliable.

Thermometer, setpoint and measured:



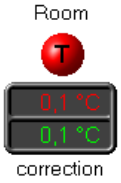
- **Turquoise** = **Setpoint**
  Required value to which the machine adjusts. It can change depending on the controller calculations and its mode (e.g. attenuation, comfort).

Room temperature sensor with correction:



- **Green** = **Correction** of value
  Correction is usually entered in the space device (by turning the knob or button), or from the visualization.
  Green may also be the measured value corrected by a constant or measured correction.

Room temperature sensor with fault:



- **Red** = **Fault** in sensor
  Red text symbolises a fault with the sensor, converter or other fault in the given input.
  The fault is probably meaningless, imprecise, or neutral.

Note

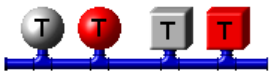
The displayed values are from the time displayed in the top right-hand corner of the technological display 23 *as "Last refresh".*

Sensors

Sensors are positioned schematically in places where they are in reality. The symbols represent the measured quantity.

Analogue sensors (temperature, pressure, humidity, etc.) are round and grey with the quantity symbol. If the sensor is faulty or the limit is exceeded they can change the colour to red. If several limits and whether they are exceeded are being monitored, text (max/min) is added which is displayed by the sensor.

Analogue thermometer, faulty (outside of limit). Thermostat with excessive temperature.



Binary two-state sensors (thermostats, manostats, level sensors, etc.) are symbolised with a square (cube).

A change in colour of the sensor colour indicates:

- **Gray** = idle state
- **Red** - fault
- **Green (Blue)** = active state (flooding for level sensors)

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Tip!
Some machines require confirmation of sensor faults. Even if the fault is removed, the sensor is still in fault mode. After scrolling the mouse to the sensor, the cursor changes to the hand symbol and after pressing the button, a menu appears for confirming the fault. It may also be necessary to confirm the associated fault (fault area 23 in the top right-hand part of the display).

3.2.2 Aggregates - pumps, valves

For displaying aggregates, such as pumps and valves, they are usually displayed in the scheme with an appropriately styled technological marking. The following description is general, used usually, but can be, depending on the given technology and specific project, completely different. Similarly, compressors, boilers and other components are displayed like pumps and valves.

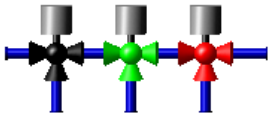
Valves

Valves can be varied: analogue (servo valves), binary (solenoids), two-way, three-way, (four- or multi-way), with indication of the position, manual, etc.

In general, we can say that a machine-operated valve is:

- **Black** = **closed**, idle
- **Green** = **open**, partially open, active
- **Red = faulty**

Example of three-way valves - closed, open, faulty



Valves with analogue measuring of the position have the percentage displayed in text 24 of the opening. They can also be manually set, then the hand symbol appears close by. In the chapter Operating technology 28 the general operating technology will be described in more detail.

Pumps

For pumps (as with compressors, fans and ventilators), rotation is also used to indicate operation. If a pump is idle, a triangular arrow shows the direction of flow.

In general, we can say that the pump background is:

- **Light grey** = if it is **idle**
- **Green** = the automatic machine has set **command for the operation** of the pump (or is in operation)
- **Red = faulty** (e.g. the automatic machine has set a request for the pump operation, but the return report indicates that the pump is still inactive)

The pump arrow:

- **Turns =** return report from the technology indicates the pump is operating (does not have to mean the real movement of the pump, e.g. if no return report)
- **Stands =** return report indicates the pump is idle (does not have to mean the pump is really idle, e.g. if the wire with the return report is interrupted)

Illustration of pumps: standing, idle, faulty

Pump performance may be managed in different ways (own management, frequency converter, controller). In the event of availability of the measured quantity of the pump performance, a text indicator 24 by the pump is displayed with the current performance, frequency of the converter, or level of operation. In the chapter Operating technology 28 the general operation of the technology will be explained in more detail.

Note
Pumps can turn even when the technology seems to be idle. These properties should be described in the documentation for

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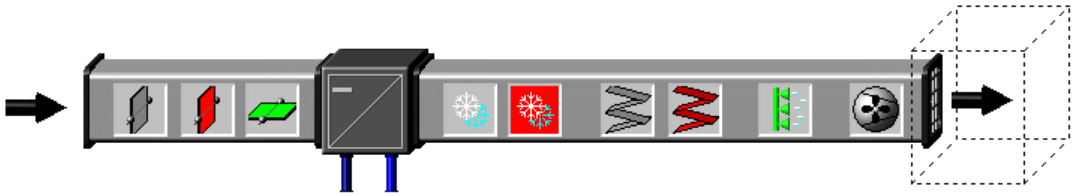
the regulation itself. Please note that it can usually mean slow down of the pumps after stopping the technology, or automatic spinning of pumps in frost protection mode, to prevent freezing of the medium in certain cooler places.

3.2.3 Ventilation systems

The ProCop monitoring system is equipped with components for the schematic display of the state and control of ventilation systems and their individual aggregates. The individual usual components for ventilation systems, colour meanings and states will then be described in more detail. Operating technology 28 is described in the next chapter.

Example of different states of ventilation components: vents, coolers, antifreeze thermostats, filters, humidifiers, ventilators and ventilated space



Vents, fire vents

Regulation of air flow is implemented with various types of vents with colour coding:

- **Grey** = **Closed** vent, usually perpendicular to the direction of the air flow
- **Red** = **Fault** in the vent mechanism - state is unknown
- **Green = Open** (partially open) vent - usually parallel to the direction of the air flow

Vents may be analogue or binary. For analogue ones, the opening percentage is displayed close by. Fire vents (usually with the abbreviation FV) are displayed as red if closed.

Heaters, coolers, recuperators

Ventilation systems are usually equipped with water or electrical heaters, coolers and various types of recuperators. These components are static from the perspective of regulation. Individual aggregates that serve these components (vents, pumps, valves) are dynamic (change their state, can be controlled). In some cases the percentage of performance by the recuperator, or level of electrical heating and cooling are displayed.

Freezers

Ventilation systems are equipped with protective thermostats - antifreeze thermostats. They can be in the air pipes, or water pipes. In the case of active frost prevention, the snowflake symbol is red.

Filters

Filtration of supplied and removed air is done with technological filters. Clogged filters are checked by measuring the difference in pressure before and after the filter. When the permitted limits are exceeded, the filter is displayed as red in the visualisation (it is probably clogged). In some cases instead of the colour change of the actual filter, a bypass hose with a manostat is drawn around the filter, which can indicate the filter is blocked when red.

Humidifiers, dehumidifiers

To adjust the relative humidity of the air, there are units which can display their working, current performance and fault state. Grey shows idle state, green means the device is operating, and red is a fault. The percentage performance of the device may be displayed close by.

Ventilators, fans

Ventilators and fans (and similarly pumps, compressors, etc.) can also use rotation to signify operation. Marks on the ventilator show the air flow direction.

In general, we can say that the background for the ventilator or fan is:

- **Light grey** = if **idle**
- **Green** = automatic machine has set **command for operation** of the ventilator (or it is operating).

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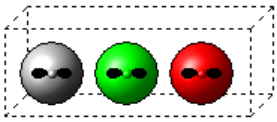
- **Red = faulty** (e.g. automatic machine has set requirement for pump operation, but the return report indicates that the pump is still)

Ventilator and fan blades:

- **Turn** = return report from the technology indicates the ventilator is operating (does not have to mean the real movement of the ventilator, e.g. if no return report)
- **Stand** = return report indicates the pump is idle (does not have to mean the ventilator is really idle, e.g. if the wire with the return report is interrupted)

Fans and ventilated space, idle, operating and faulty



Power of ventilators and fans can be managed in various ways (own management frequency converter, controller). In the event of availability of the measured quantity of the ventilator performance, a text indicator 24 near by is displayed with the current performance, frequency of the converter, or level of operation. In the chapter Operating technology 28 the general operation of the technology will be explained in more detail.

Note
Usually the transfer to manual operation of the given device is also indicated with a hand symbol next to the symbol of the given device.

3.2.4 Operating technology

Methods and options for operating the technology can differ significantly depending on the specific technology, project and access permissions. We will focus on the usual methods for operating technology.

Communication with the controller

In the top right-hand corner of the technological display is the time of the last refresh of values. This time tells us at what time the values were refreshed that are displayed in the technological scheme.

Under this time the current communication state is shown, most often:

- **OK** - last communication was successful, at the moment there is no refresh of values under way
- **Waiting for communication path** - the system is going to communicate but is waiting for the communication path to be released (another controller is communicating, the modem is dialling a connection, connecting to GPRS)
- **Communicating** - values from the controller are currently being refreshed
- **Communicating - CONTINUOUSLY** - values from the controller are currently being refreshed - continuous refresh is set, the data will be refreshed continually, until another refresh type 59 is selected, or the maximum period of continual refresh expires (usually 1 hour, depending on the project)
- **Communication error** - the last communication was unsuccessful, there was no connection established, the cable is interrupted, or there is another communication error
- **Disabled** - periodic communication with the controller has been disabled, the data will not be refreshed until the communication type 59 is changed

Tip!
After clicking the mouse in the area with the communication state the local menu can display options for manual launch and stopping communication, or changing the update type 59.

Joint operations, parameters

In the right part of the technological display, you can usually find the area for joint operations 23. In this part there are buttons to display and set the operating mode, parameters, time programs, and other, e.g. servicing settings. Using the mouse button, the local menu appears 36, or the dialogue for setting values 31, table for setting values 32, or the dialogue of the time program 32.

If there is not a mode, time program or other settings in the automatic mode, on the button or near to it there is usually a symbol for the manual mode from the controller - a green hand.

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Signalling manual mode from the controller

Manual mode means that the operating, mode, state or time program is converted to the manual fixed state not managed by the controller. The controller will therefore not change the mode according to the set time program; it will not manage the technology or individual aggregate according to need, they will remain in the set state.

Important warning!
All values set appear in the visualisation until the change can be set in the controller. Given the differing communications paths, the intervention in the technology may be significantly delayed. If the settings are successful, they are displayed in the notification area with the symbol of a green bell and in the events a record of the values is made. If the record is not possible, an alarm occurs and is recorded.

Therefore if we convert the parameter with a dialogue window, and we reopen the window, the original value will stay here, until the record can be implemented and confirmed in the controller. It does not mean that the record was not successful or will not be implemented. In the top right-hand corner you can monitor whether after setting the values communication has been established and made.

Operating aggregates in the technological scheme

It is possible directly in the technological scheme in individual aggregates by clicking the mouse to get the local menu for setting the state and operating mode of the aggregate. In certain cases it is possible to set detailed service parameters for the aggregate, such as the time of the run down for pumps, hysteresis and the required value for inlet solenoids, etc.

Signalling manual mode from the controller

If we remove the aggregate from automatic operation managed by a controller, for example setting the mode or state, a green hand symbol appears there. This notifies us at a glance at the technological scheme that the aggregates the controller is not directly managing are converted to the given mode or state manually by the user. You can switch back again to the automatic aggregate in its local menu, and after a short time the hand symbol disappears.

Signalling manual mode from the switch on the switchboard

In some cases, technologies are equipped with manual mechanical switches and reports about their states. When switching the actual switch a symbol of a red hand appears in the technological scheme, which informs of the switch of the aggregate into manual mode. This mode cannot be changed in the visualisation, it must be manually switched on the switchboard into automatic mode.

From the principle function, it can happen that the aggregate is switched on the switchboard and on the controller to manual mode. Then both symbols are displayed there at the same time.

Important warning!
Switching aggregates to manual modes without sufficient knowledge of the technology can cause dangerous technological states, or even damage to the equipment.

3.2.5 Information about variables, displaying trends

A joint function of all technological displays is the possibility to select variables, displaying detailed information about variables and appropriate historical trends.

We select variables by pressing the CTRL key and left-clicking the mouse on dynamic parts of the display. The selected parts of the display are denoted in a light colour. Selecting one area can be done in the same way as a selection. To select all areas of the display just click the mouse anywhere in the display without pressing CTRL. The local menu with the available functions is displayed by **right**-clicking the mouse on the entity.

Controls:

- **select** - CTRL + **Left** mouse button on an unselected entity
- **deselect** - CTRL + **Left** mouse button on a previously selected entity
- **local menu of functions** - CTRL + **Right** mouse button on entity

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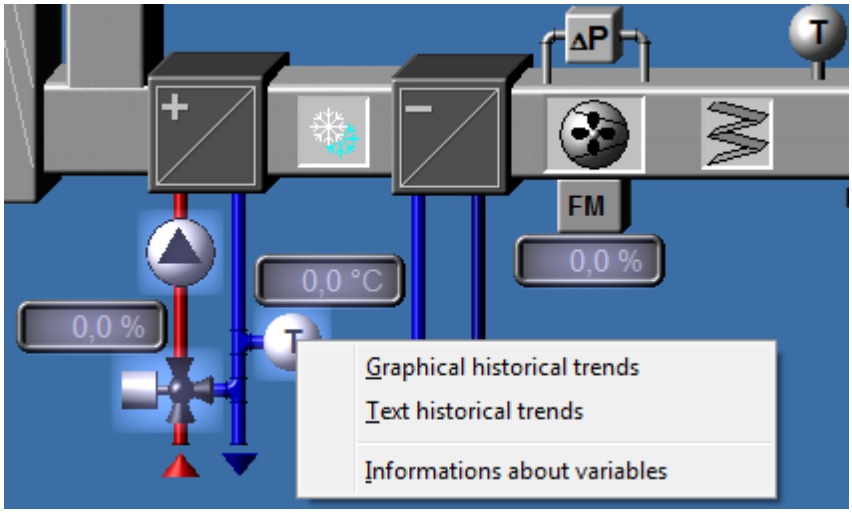
- **select all** - **Left** mouse button anywhere in the display without CTRL

Example of selected parts of the display with the local menu



Local menu of variables

After selecting variables and opening the local menu CTRL + the **right** mouse button displays the local menu.

Options in the local menu of variables:

- **Graphic trends of all variables** - opens graphic historical trends with the selection of all available trends of selected variables
- **Text trends of all variables** - opens text historical trends with the selection of all available trends of selected variables
- **Information about variables** - opens a dialogue window with detailed information about variables

Dialogue window with information about variables

In the dialogue window with detailed information about variables, in the top part a list of variables from selected areas of the technological display is shown.

The column for each variable then contains:

- The **name** of the variable with icons of the direction and data type of the variable
  - A - analogue
  - B - binary
  - C - counter
  - D - discrete
  - T - text
- **Description** of the variable with indication of the active alarm
- **Value** - Live value of the variable
- **Unit** of the variable
- Information that the variable is trending
- **Configuration** - connection to the technological variable of the controller
- **Last update** - the date and time of the last variable refresh

Note

If the variable is invalid, the texts are printed in grey. If the variable has an active alarm, the row is printed in red.

Tip!

By selecting the row with the variable, the lower part shows further details about the variable, alarm, limits, connected trend and the like.

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3.3 Dialogues of Operator Controls

Not only does the ProCop monitoring system allow monitoring of the technology state, it also allows a variety of interventions in the technology. An example can be controlling transmissions (pumps, ventilators, etc.), opening and closing valves, setting the required values, etc.

All these events are implemented via dynamic actions using the mouse on individual display entities. You can recognise the display entity that can undergo this by the changing mouse cursor. Instead of an arrow, a hand symbol appears over this entity.

The entity usually reacts to clicking with the left or right mouse button:

- Direct setting of values 31
- Create a dialogue for entry of value 31
- Create a dialogue with preselected constants 32
- Create a dialogue for entry of date and time 32
- Create a dialogue with a table of values 32
- Dialogue of a time program 32
- Create a floating menu 36
- Switch displays 37

The entity, however, may also react to other mouse events. It can be, for example, setting values using the pull button. The entity should be handled with the mouse and "dragged" to another place expressing the set value.

The value in the entry fields of the settings dialogue is written and entered in the national format setting in Windows:

- With the OK button confirm the set value.
- With the Cancel you end the dialogue without the set value being accepted.
- The Help button takes you to this help section.

Note

After clicking the OK button, the requests for setting the value are ordered in a communications queue. Until the request is dealt with and the value is back newly calculated from the controller, the value does not change when next opened in the dialogue window. The record implemented for the value is usually indicated in the events 51, a record not implemented is declared as an alarm 51 (usually communications). Until the record of the value is recorded in the events 51, the value does not change in the dialogue window.

Tip!

Any dialogue can be cancelled, and no change is then sent to the technology, even if adjustments have been made in the dialogue window.

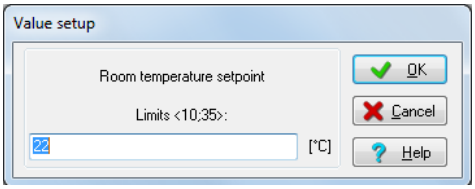
3.3.1 Direct setting of the value

By clicking on the entity, the given technological variable is set directly. The meaning of this variable is usually clear from the context, or is printed as a tip when resting the mouse cursor over the entity. The mouse curser changes to a hand over this kind of entity. This method of control is only used for simple and safe operations, such as switching the display, etc. For more complex settings, a dialogue window or local menu will usually be used.

3.3.2 Dialogue for entry of a value

During monitoring, it is sometimes necessary to change the value of a certain variable (e.g. required temperature, etc.). For this purpose, clicking in the given place on the screen can create a dialogue for entry of the value.

Dialogue for setting the value (in given limits, of given unit).



The dialogue is made up of an entry row and set of buttons. The new value can simply be written in the entry field, while it is possible to use the keys Delete and BackSpace to delete old values. The old value is automatically rewritten if it is selected (e.g. immediately after opening the dialogue).

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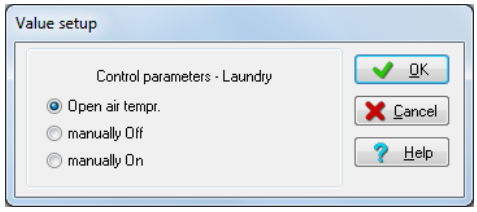
For entering decimal values you can use a comma or point depending on your Windows local settings.

3.3.3 Dialogue with preset constants

The dialogue with preset constants is like the dialogue for entry of a value 3.1, but the difference is that it contains a free number of predefined constants in the form of radio buttons. After clicking a specific constant, the value is written in the entry line.

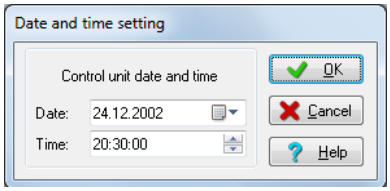
Dialogue for setting a value with preset constants (with content checking).



3.3.4 Dialogue for entry of date and time

This dialogue allows the input of data, time or both date and time together.

Dialogue for entering date and time (alternatively for entering date or time).



The dialogue is made up of an entry row and set of buttons. The new value can simply be written in the entry field, while it is possible to use the keys Delete and BackSpace to delete old values. The old value is automatically rewritten if it is selected (e.g. immediately after opening the dialogue).

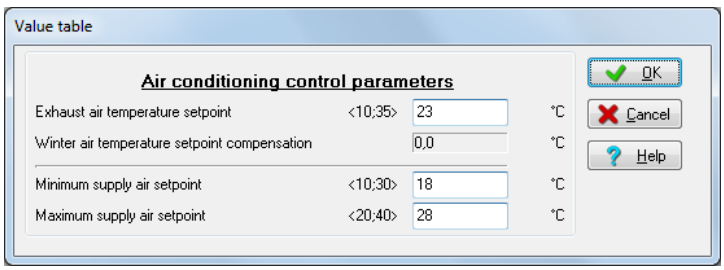
The date can also be selected from the calendar after pressing the arrow symbol in the row with the date or calendar symbol.

In special cases it is possible to enter a time higher than 24 hours - if it is in a technology with a time slot, not a time within a day.

3.3.5 Dialogue with a table of values

The dialogue with a table of values allows you to set several values at once in one dialogue. These values are put in a table. You can move the mouse between individual entry rows in the table, or use the Tab key (to move forward) or Shift+Tab (move back). Individual entry rows can be complete with the set limit and unit. The grey rows are read only, so you cannot enter a value in them and they are for information about the value of a quantity which may be necessary to input other values.

Example dialogue with table of values; the second value cannot be set, it is just for informational purposes



3.3.6 Time Program Dialogue

The dialogue for a time program is for easy entering and editing of weekly time catalogues known as TSP (Time Switch Program).

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In the weekly time program, you can designate up to six changes to the required value for each day. There can be three types of time catalogues. Individual types are marked as TSP1, TSP2 and TSP3. The difference between individual time catalogues is in the number and type of parameters. For this reason the method of managing only the most common time catalogue, TSP3, will be described further. Parameters of the other time programs are only a subset of this.

In the general time program the following values can be changed:

- **Time** - In the time column you can enter the required time for changing the entered value.
- **Level** - In the level column you can select one of the offered values required (e.g. switched off, normal, attenuated).
- **Act**. - Selecting the field in the act column means the given row of the time catalogue is active. This way you can delete or activate one of the changes of the required value for any day, without having to shift individual rows in the time catalogue. This option is particularly interesting for temporary adjustments to the time catalogue. The selection is available only in "Advanced settings".
- **Stage** - In the stage column you can enter the required value for the specific technological variable.
- **Opt**. - The parameter "Optimum Start/Stop" is part only of the TSP3 time program, and can be used, for example, for optimising a change to the required value. You can find more information in the documentation for the specific monitoring project.
- **Stage2** - Apart from the required value, it is possible in TSP3 to enter a second required value for a specific technological variable in the column Stage 2.

Note

The majority of time programs only have some of the above options, depending on the controller type and time program used in it.

The dialogue for a time program has three tabs:

- **Basic settings** - It is only possible to edit previously defined rows of the time program, while the same days for the time program are always automatically merged into one line. There is a more detailed description in the topic basic settings for a time program 34.
- **Advanced setting** - In this tab you can define any time catalogue for any day. There is a more detailed description in the topic advanced settings for a time program 34.
- **Predefined level colours** - If the colour scheme for individual groups is not suitable, you can assign any colour to each level. There is a more detailed description in the topic predefined level colours for a time program 35.

Graphic display 36 in the lower part of the dialogue displays the current settings of the time program.

Settings profiles

Setting time programs (profile) can be saved in the monitoring system under the selected name in the tab advanced settings 34, or deleted. In the basic 34 and the advanced 34 settings, you can select a profile at any time and redo the whole time program for the saved scheme.

Note

Profiles can be used between different time programs, but only if they have the same level - a profile will not be offered in the list if the time program that was saved with another number or level meaning.

Joint control of the time program dialogue

In all tabs, buttons with the following functions are available:

- The OK button implements settings of changed values into the technology and closes the dialogue.
- The Apply button implements the settings of the changed values into the technology but the dialogue is not closed.
- The Cancel button closes the dialogue without the changed values being set in the technology.
- The Help button displays the help for the relevant tab.

Notes

All tabs and graphic displays are only a different view of the same time program, if an adjustment is implemented in any tab or graph; the others are also adjusted according to the given change.

In the time catalogue, you can, in some cases, set the time program not only for individual days of the week (Monday-Sunday), but also the time program for special days marked as Anniversaries, Holidays and Periodical.

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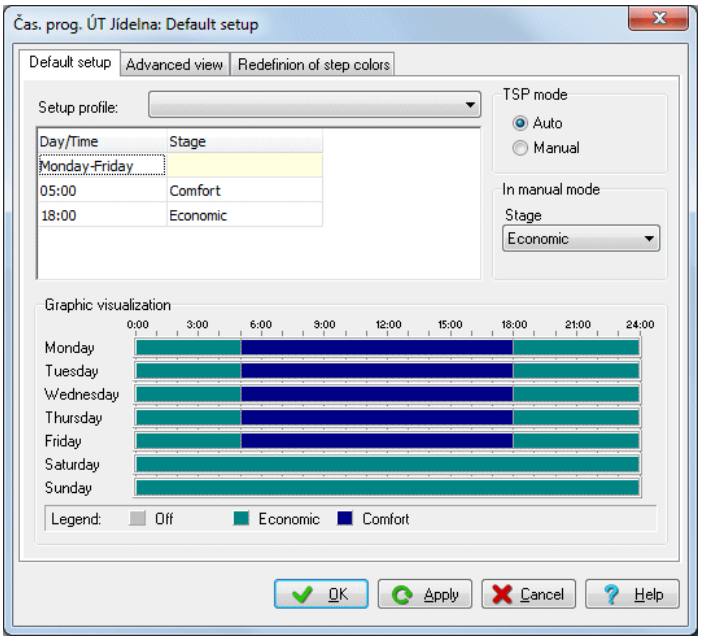
The time program is set in the controller. The controller manages the technology according to the time program and separate clock of the real time independent of the monitoring computer. It is therefore necessary for the time and date (and where appropriate, the day of the week) to be entered correctly in the controller for the time programs to function correctly.

3.3.6.1 Time program basic settings

In this display, it is possible to edit predefined rows in the time program, while for the same days of the time program, they are always automatically merged into one row. If, for example, the time program is defined in such a way that individual working days will have the same number of rows, including their parameters, only one row, called "*Monday-Friday*" appears in the basic settings mode. In the basic settings, you cannot add further rows for the time program or define a special time program for a certain day.

Example of time program basic settings with adjustable time and level:



On the right-hand side, the current operating mode of the time program can be displayed. If set to Auto, the time program is used and the controller is governed according to it by the technology. If in Manual mode, the time program is disabled and the technology is still in one state and in the defined level in manual mode.

To reset the time program to a previously saved profile, just select it from Profile settings. In the selection only the profiles which can be applied to the given type of time program are displayed - with the same number of levels and the same meanings. Profiles can be saved and deleted in the tab time program advanced settings 34.

For predefining a time program in a larger scope, it is sometimes necessary to use time program advanced settings 34.

Colours of individual levels can be predefined 35.

Notes

The time catalogue can be switched to manual operation in the basic settings mode. With manual operation you can manually set the values Level, Stage 1 and Stage 2 in the manual operations part.

Colours for individual levels can be predefined against their basic states in the third tab of the dialogue for a time program 35.

3.3.6.2 Time program advanced settings

In this tab you can define any time catalogue for any day. When selecting several days, the user can edit the time program for these days at once. With batch editing, the differences in settings of the time program are highlighted with a colour icon for the selected day in the time program.

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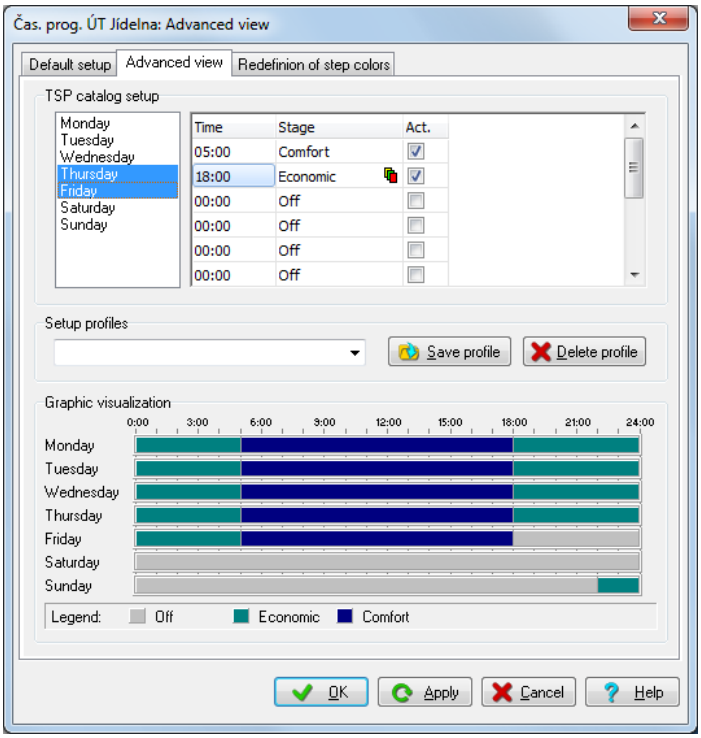
Time program advanced settings - when selecting several rows (while holding the Shift,, Ctrl) a colour icon is displayed for differing rows.



Entering the time, levels, stages (TSP2, TSP3) and activity of the row, is implemented together for the selected rows. The row does not appear - it is not active - unless the **Act** activity mark is ticked.

To reset the time program to a previously saved profile, just select it from Profile settings. In the selection only the profiles which can be applied to the given type of time program are displayed - with the same number of levels and the same meanings.

If you want to save the current settings of the time program, just fill out the new name in the selection and press the button Save profile. If you want to delete a profile, just select it and press the button Delete profile. Cancelling a dialogue does not have an impact on the adjusted profiles; changes in the profiles are immediately adjusted by the system without confirming the dialogue with the OK button.

Graphic display 36 at the bottom part of the dialogue displays the current settings of the time program.

Notes

The time catalogue can be switched to manual operation in the basic settings mode. With manual operation you can manually set the values Level, Stage 1 and Stage 2 in the manual operations part.

In the advanced settings mode, the current settings of the time program can be saved under a specified name and these settings can later be used and applied to another time program with the same parameters (levels, stages).

In the time catalogue, you can, in some cases, set the time program not only for individual days of the week (Monday-Sunday), but also the time program for special days marked as Anniversaries, Holidays and Periodical.

3.3.6.3 Predefining level colours for the time program

To unify it and better orientate yourself you can define user colours for the levels of time programs. These colours are then displayed in the graph and key 36 in tabs for the time program dialogue 32. The level text is assigned a specific colour.

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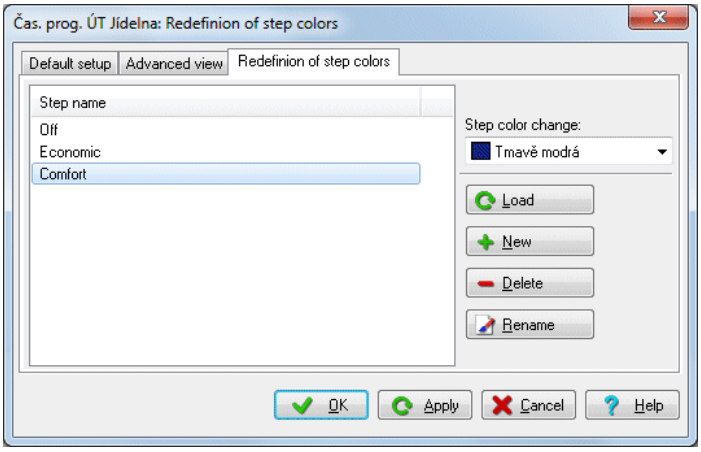
Example of setting level colours; each level of the time program can have any colour set.



When setting colours, by pressing Fetch level names from the open time program. The New button allows you to create and name the row of the assigned level name and required colour. In the list the jointly predefined level colours of all time programs are displayed. You can Delete, or Renamethe selected row with assigned colour for the name level using the buttons.

After selecting any level the added colour is shown on the right. By simply switching the colour, the required colour is assigned, after clicking the arrow, the list of colours offered is expanded.

Note

Changes in colours and names of levels appear immediately; the buttons OK, Apply *and* Cancel *have no effect on the adjustments.*

3.3.6.4 Graphic illustration of the time program

A graph of the time catalogue displays the time program and allows the changes to be implemented using the mouse. Changes in TSP can be implemented in batches in the same interval or separately.

- Adjustment of TSP on several days is implemented by dragging the mouse to the interface for changes or by the whole time interval in the graph (the cursor changes appearance).
- Adjustment of TSP is implemented jointly on days with the same time change or the same position for the time interval.
- Adjustment of TSP on one day is implemented the same way as in the previous case, but prior to pressing the left mouse button, we hold the Ctrl key, thus adjusting only one day.

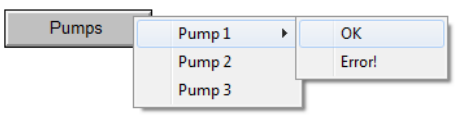
Note

Changes in the graphic illustration immediately appears in the text values in the top part of the dialogue, and vice versa. By pressing OK *the settings of the changed values are implemented into the technology and the dialogue is closed.* Apply *implements the settings of the changed value into the technology but the dialogue is not closed. The* Cancel *button closes the dialogue without setting the changed values into the technology.*

3.3.7 Initiating floating menus

Buttons, aggregates and objects can initiate the local menu upon clicking the mouse button. It can be a single or double click of any button, depending on the project. Usually, one click of either mouse button is used, and for special or service settings the right mouse button, or double clicking either of the buttons.

Example of floating menu including button to initiate it



By clicking on a dynamic part of the technological display you can initiate the floating menu containing a variety of commands. This floating menu can also be multilevel, i.e. after selecting from the first command level, the menu develops to another level.

Some rows can be inactive (grey) in relation to the current state of the monitoring technology.

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Tip!
Objects and areas which implement some kind of event after pressing the mouse button are recognised through the mouse cursor changing the appearance from an arrow to a hand symbol when scrolling the mouse cursor in this area.

3.3.8 Switching the display

By clicking on a dynamic part of the technological display, another display is shown. Usually, its name or description is written directly in the display as the button name, or the dynamic area, e.g. HVAC1, CH, Boiler, or the arrow or double arrow symbol can be seen here to navigate displays.

Tip!
Using the Back *button, you can return to the previous display in the display history* 22 *at any time.*

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4 Trend Browser

The trend browser allows the historical development of scanned quantities to be displayed in the form of graphs and tables. The trend browser is part of the ProCop Toolbar, which makes the functions of the monitoring and visualisation system available in a clear and simple way.

The trend browser can be opened by pressing the button Trends, or, in the advanced menu 15, by selecting View ▸ Trends. You can also initiate trends at any time with the keyboard shortcut ALT+T.

The trend browser allows staff to browse historical trends of technological variables in the form of clear graphs and tables. The specific scope of trending technological variables is defined in the monitoring project in Designer mode. This forms a configuration part of the ProCop visualisation system. For work with the program in the monitoring mode, however, knowledge of this designer part is not necessary.

In the browser for historical trends we can display several graphic 40 histories at the same time, we can set the the properties of what is shown 46, deduct values scanned at a certain time and if desired print 49 and export 50 the results. It is also possible to create consumption overviews 42 for the given period, even within monthly archiving of historical trends.

4.1 Description of the trend browser window

The trend browser window is made up of a toolbar and the window desktop. The window desktop displays the selected trends in the selected time interval, either in the form of a table or a graph. There is a taskbar above the desktop.

The toolbar of historical trends: selection of settings templates, selection of trends, date and time, trend archive, displays, properties, etc.

The toolbar contains operating components necessary for browsing trends.

- **Groups of settings** 39 - allows the current trend browser settings (displayed trends, time interval, etc.) to be saved and these settings to be viewed quickly at any time; by clicking on the arrow by the name, the local menu is displayed with a list of trend templates and other functions
- **Selection of trends** 40 - allows you to select the list of currently displayed trends from the list of all trends
- **Selection of time interval** 41 - allows you to select the type of time interval (absolute, relative, floating) and the extent of this time interval for displaying trends
- **Selection of displayed set** 43 - switching between the current trends displayed and the archive of trends for a specific month and year
- **Text** 47**/Graphic view** 43 - this option allows you to switch between a graphic and text view of trends
- **Properties** of **graphic** 46 **/ text view** 48 - settings for a variety of properties of the browser for graphic and text trends, such as the background colour of the window, grids, value and time markings, measuring cursors, the type and extent of left and right value axes, etc.
- **Trends key** 48 - description of the key for graphic and text trends, row meanings
- **Print** 49 - print of selected text or graphic trends
- **Export** 50 - allows the displayed trends to be exported to a file in the relevant format

4.2 Groups of settings

Settings for the graphic and text trends window including the selection of displayed trends and the time interval can be saved at any time and later launched quickly. In the toolbar of the trend browser, on the far left, the current group of settings is displayed. By default, the group with the name (Default settings) opens, which can be freely adjusted by

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changing the trend properties, selection of trends and the time scope and, if wished, saved. When opening the browser of historical trends, these settings open automatically.

By clicking in the toolbar on the name of the template settings, by right-clicking the button on the trend desktop, and by selecting Setting groups in the local menu, or the Enter key, a dialogue window opens to manage groups of settings. Groups of settings may be organised in a tree. With the File button, you can create and name a new file, and with the Template button create new blank settings with the same template (Default settings).

Tip!
Templates can be moved individually between files using the mouse. Just grab the template with the left-mouse button and drag it to the group, where it should be moved.

You can select and open any group of settings with the Open button. Files and templates can be renamed using the Name button, or deleted with the Delete button. You can copy the selected template with the Copy button and then name it or move it elsewhere.

All changes implemented in the way described above are saved using the Save button or Open after selecting a newly displayed template. Cancel then returns all the adjustments to the original state. For selecting a group of settings the system user who last modified the group is given at the top.

Saving settings

After setting the displayed trends, time interval, or other properties, by right-clicking the mouse on the graphs or table you can open the menu with the option Save template, CTRL+S, or Save template as SHIFT+CTRL+S. This option saves the settings in the selected group, or opens a dialogue window with the newly created group of settings, where you can enter their name.

Refreshing settings

By clicking in the toolbar on the arrow by the template settings name, a tree menu is expanded with quick selection of all previously saved groups of settings, the option to save the current settings in the groups and opening the dialogue window for management of the groups of settings.

Tip!
After deleting the template (Default settings) and reopening the browser of historical trends, a template is created with the default settings in the original state after installation.

4.3 Selection of trends for display

The dialogue for the selection of trends can be initiated from the toolbar via Selection of trends, or with the same selection from the local menu, which opens after right-clicking the mouse anywhere on the desktop of the window for graphic or text trends. The same option can be implemented using the keyboard shortcut CTRL+Enter.

The dialogue contains an expanded tree of all groups of trends. After selecting the group of trends, a list of trends from this group is shown in the right part of the dialogue. Under the list of trends of the selected group, there is a list of displayed trends.

- **Adding trends to the list of displayed trends** - Mark the trends you want to display and press the dialogue button Add or the Insert, key or drag the selected trends with the mouse to the list of trends displayed. Another option is tapping the left mouse button on the trend you want to add.
- **Removing trends from the list of displayed trends** - Mark the trends you want to remove and press the button Remove or the Delete.key. Another option is tapping the left mouse button on the trend you want to remove.

In the dialogue, you can also influence the order of displayed selected trends using the buttons Up and Down, or using the keyboard shortcuts Ctrl+Arrow up and Ctrl+Arrow down.

Tip!
The order of the trends displayed can be changed by dragging the names of trends in the key to the necessary location.

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4.4 Selection of time interval

The dialogue for selection of the time interval can be opened from the toolbar using Select date and time, or by selecting from the same menu from the floating menu initiated by clicking the left mouse button anywhere on the desktop of the window for graphic or text trends. An extremely quick method of initiating this dialogue is also clicking the left mouse button anywhere on the time axis of the window for graphic or text trends, or pressing the Spacebar.

The dialogue contains three tabs for the definition of the time range:

- **Absolute time range** - Fixed time range defined by the time and date of the start and end of the time interval.
- **Relative time range** - Time range defined relatively against the start of the day, week, month, year, etc.
- **Floating time range** - Time range defined relatively against the actual time.

Under the definition of the time interval, the currently displayed time range is shown for checking purposes. In the case of relative or floating time intervals, this range can change.

At the bottom of the dialogue it is possible to switch off the displayed time axis and set the time to finish reading the data from the trend server and the time delay for portraying trends.

Tip!
To enlarge a cutout of the trend area, you can drag the mouse on the trends desktop, on the time or value axes. You can go back with the button in the bottom right-hand corner by the time axis. The whole range of the given axis can then be displayed by pressing by the given axis.

4.4.1 Absolute range

The absolute time range is defined with a fixed start and end of the time interval.

In entering the start and end of the time interval, the procedure is exactly the same.

Entering the date can be implemented either directly by entering a specific data using the keyboard, or more conveniently by opening the calendar by clicking the expansion button and selecting the specific date. If necessary, you can use the Today button to return to the current day, or the scroll button to change the date to the previous or next day.

Entering the time can again be implemented either by entering the specific time using the keyboard, or using the scroll button next to the field for entering the time. If necessary, you can use the button Midnight for setting the time to 0:00:00, or the buttons for changing the time in hours.

4.4.2 Relative range

The relative time range allows you to enter the time period relatively to the important calendar point in relation to the current date, e.g. against the start or end of the day, week, month, year, etc.

When defining the relative time interval you can select some of the preset relative time intervals, or define your own. When defining your own relative time interval, you can proceed from a predefined interval. Editing the range is done by clicking Adjust.

The start and end of the interval are edited at the same time, by selecting the default moment and any time shift. When selecting the time shift, you can select both positive and negative time shifts.

Note
The resulting entered time interval that corresponds to the current date and time is displayed in the field Current time range.

4.4.3 Floating range

A floating time range, in comparison with a relative time interval, is always defined against the current time. It is a time period of the specified length, shifted against the current time by the defined value and rounded off to the selected unit, e.g. hour, day, month, etc.

When selecting the floating time interval, you can select either one of the predefined intervals, or define your own, while when defining your own floating range, you can start from one of the predefined time ranges.

Edit your own time range by pressing the Edit button.

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The actual floating time range is thus defined by:

- **Length range** - unlike the absolute and relative time interval, the floating time range is not defined as the time of the start and end, but the length of the time axis. The time of the end is always the current time (plus any shift – see below)
- **Rounded to whole nr.** – by rounding off the interval, we actually define after what period the time axis is automatically shifted. When setting the rounding off to seconds, the time axis displayed will change every second, when rounding off to whole minutes, the time axis will change every minute, etc.
- **Offset by ... back towards current time** – the offset of the whole displayed interval against the current time. It is usually a good idea to set the time axis shift as a certain percentage of the interval displayed. In this way you can ensure that the current time is not exactly the same as the right edge of the displayed cutout but is far enough from it, which creates a much clearer impression overall.

Note

The resulting specified time interval, which corresponds to the current date and time, is displayed in the area Current time range.

4.4.4 Filter of samples in text trends

In the middle part of the dialogue for setting the date and time, there is a filter for samples in text trends. This allows the user to set the period samples are displayed in the text trends, independent of the actual trending of values by the system.

It is possible to select from these filters:

- **All samples** – displays all samples from the database, no filters applied
- **With period; shift** – allows the user period with which individual samples are displayed to be entered. Then the shift of the period against midnight also. Entering is accepted in the format when the period and its semi-colon (;) is first introduced and then it is possible to introduce the shift of the period and its unit. Units can be used as follows: s - second, m - minute, h - hour, d - day.

  ```
  Example: 1 h; 15 m
  ```
- **Every day** – displays one sample per day in the hour entered.
- **Every week** – displays one sample per week, at midnight on the selected day.
- **Every S. in the month** – displays one sample per month, at midnight on the entered day.

Tolerance of the time for samples

Tolerance of the time for samples allow a sample to be displayed that does not have a precise time according to the selected period, shift (not functioning when selecting "All samples"). The value tolerated of the time deviation is relative against the entered period and is entered in percent of the period (max. 50%).

Consumption

In the filter of samples it is possible to select the option "Consumption". This option displays the difference of the value following from the current one in place of the actual measured values of trends. Therefore, if we select a filter, e.g. "Every day", we get a table of daily consumptions, i.e. the differences between values of the current and following day. With this option, the time is displayed as an interval (December 2006) or the start of an interval, to which the consumption pertains. The end is the time of the next row.

Let us give some examples of usage. For each, we first select the required time period for which we want to calculate the consumption, tick "Consumption" and set a filter:

- **Hourly consumption** – we select the filter With period; shift and enter in the period

  ```
  1h; 0 s
  ```
- **Daily consumption** – we select the filter Every day at and enter the hour of the reading.
- **Weekly consumption** – we select the filter Every week and enter the day of the reading.
- **Monthly consumption** – we select the filter Every month and enter the day of the reading.

Selection of tolerance allows the approximate consumption to be displayed even when at the given moment the sample was not available. If we cancel this option, in places where there is no sample available, the sample with the precise period does not display any data.

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4.5 Selection of displayed set

The trend server provides the option for automatic archiving and backup of trends.

When browsing trends you can switch from browsing current trend files to browsing trend archives for the given month and year, at any time. The selection of the displayed set of trends can be done by changing the selection in the list of available sets of trends. This option is still available in the historical trends toolbar 39.

Setting the displayed trends does not change when changing the trend set. If the selected set of trends does not contain the chosen trend, the trend is not depicted.

When there is a change to the displayed set the time axis automatically switches to the relevant range of the archive. When returning to the current trends, the range of the time axis switches to the current day.

4.6 Graphic Trends Browser

Individual quantities are displayed in graphic trends in the form of linear graphs. This display method gives the user a very good idea about the behaviour of values of the monitored quantities.

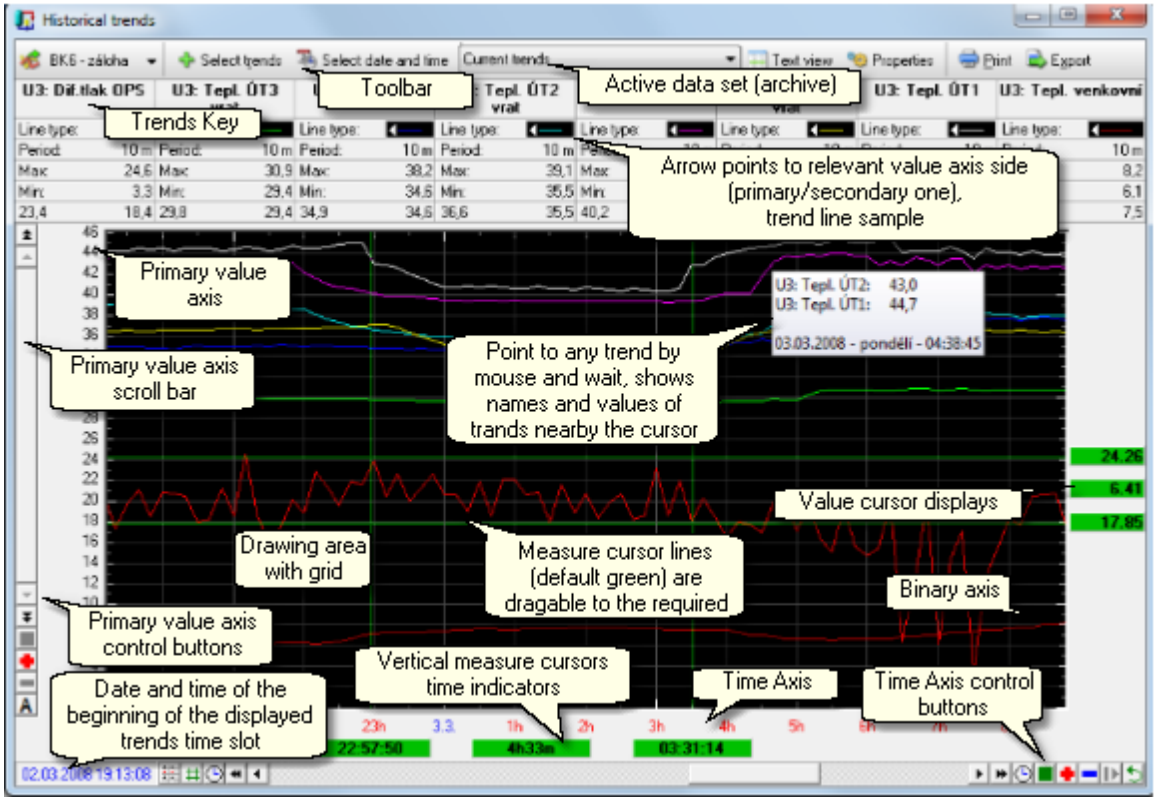
In the graphic trends it is possible to differentiate curves by colour, thickness and type of line. It is possible to roughly subtract values directly from the graph, according to the set grids, or more precisely measure the values using the value and time measuring cursors, or ascertain the values directly in the table.

Tip!
If we pause the cursor over the graph of the trends, a bubble with a name of the close trends and precise values and units at the given time is displayed.

4.6.1 Description of the window of graphic trends

The window for the browser of graphic trends is made up of several parts. The description of individual parts of the window for the browser for graphic trends is described in separate chapters.

Preview of the window of graphic trends


Historical trends
Toolbar
Active data set (archive)
Trends Key
Arrow points to relevant value axis side (primary/secondary one), trend line sample
Primary value axis
Primary value axis scroll bar
Point to any trend by mouse and wait, shows names and values of trands nearby the cursor
Value cursor displays
Drawing area with grid
Measure cursor lines (default green) are dragable to the required
Binary axis
Primary value axis control buttons
Vertical measure cursors time indicators
Time Axis
Time Axis control buttons
Date and time of the beginning of the displayed trends time slot

- **Toolbar** 39 - joint operating components for graphic and textual display of trends
- **Key** 48 - Name of the trend and its most important parameters
- **Scrollbar for primary value axis** 45 - scrollbar to move in primary value axis
- **Parameters of primary value axis** 45 - operating components for primary value axis

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- **Scrollbar for secondary value axis** 45 - scrollbar to move in secondary value axis
- **Parameters of secondary value axis** 45 - operating components for secondary value axis
- **Area for plotting trends** 44 - area with grid for plotting selected trends
- **Value measuring cursors** 46 - measuring cursors for precise calculation of values and their differences
- **Time measuring cursors** 46 - measuring cursors for precise calculation of time and interval lengths
- **Scrollbar for time axis** 44 - scrollbar to move in time axis
- **Parameters of time axis** 44 - operating components for work with time axis

4.6.2 Area for plotting trends

The selected trends are portrayed in the central part of the graphic trends window.

The values are illustrated in the graph in relation to the type of variable in several ways:

Trend type	*Illustration method*
ANALOG	Polyline joining the measured values
BINARY	Stepwise rectangular function (binary variables are always displayed above each other)
COUNTER	Stepwise rectangular function in several phases and the change of gradient exactly at the measured value
DISCRETE	Stepwise rectangular function in several phases and the change of gradient exactly at the measured value
TEXT	Not displayed in graphic trends

Along with the trends displayed, this space contains a grid and cross-hair cursors 46.

Marking any area with the mouse enlarges this area to the full viewing area. At the same time, the value axis 45 switches to manual scale and pauses the automatic shift of the time axis 44.

Tip!

You can switch back to the automatic scale by clicking the *button, or the green square* *by the value axis, which also removes the enlargement and sets to the whole axis scale. This option is also available with the time axis.*

If the cursor is paused over one of the trends displayed, the sample time is displayed, with the trend name and its value. If there are several trends near the cursor, the names and values of all these trends are displayed.

4.6.3 Time axis of trends

The time axis is composed of several parts

- **Rapid access buttons** - for quick switching of the display mode and switching displayed measuring cursors:
  - Switching to textual display of trends
  - Switches off/on display of measuring cursors
- **Scrollbar for time axis** - for the shift of the displayed cutout in the range of the time axis when enlarging a specific time area. The scrollbar also contains these icons:
  - Increasing the range of the time axis to the past
  - Shift of enlarged cutout to the past
  - Enlarged range of value axis to the future
  - Shift of enlarged cutout to the future
  - Setting the time start/end of the time axis
- **Operating components of the time axis** - for enlarging or shrinking the range of the time axis, or stopping the automatic shift of the time axis.
  - Enlarging the area to half range
  - Shrinking the area to double range
  - Displaying the whole range of the time axis
  - Indication of the automatic shift of the time axis, stopping automatic shift

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Indication of stopping the time axis, switching off automatic shift

Return to the previous range of the time and value axes

- **Time axis** - Displays the current time mark on the time axis. By marking the part of the time axis with the mouse it is possible to enlarge the selected area to the whole width of the display area. When enlarging the area of the time axis the automatic shift of the time axis is stopped at the same time.

Tip!
Back to the display of the whole range it is possible to switch (cancel cutout, enlargement) by pressing the button with the symbol of a green square *for the relevant axis.*

4.6.4 Value axis of trends

The value axis is composed of several parts.

- **Scrollbar of the value axis** - for shifting the displayed cutout in the range of the value axis when enlarging a specific area. The scrollbar also contains these two icons:

Enlarging the range of the value axis towards higher values

Shift of the enlarged cutout upwards

Enlarging the range of the value axis towards lower values

Shift of the enlarged cutout downwards

- **Operating components of the value axis** - enlarges or shrinks the range of the value access, or switches between manual and automatic range of the value axis.

Enlarging the area to half range

Shrinking the area to double range

Displaying the whole range of the value axis

Indication of the automatic shift, switch to manual mode of the range of the value axis

Indication of the automatic range, switch to automatic mode of the range of the value axis

- **Value axis** - Displays the current value and the value mark on the value axis. Marking the part of the value axis with the mouse allows you to enlarge the selected area to the whole height of the display field. When enlarging the area of the value axis, the range of the value axis automatically switches to manual.

The range of values of the value axis by default sets automatically according to the range of the displayed values of trends. By choosing Properties from the toolbar, or by right-clicking the mouse on the value axis, you can set the required range of the appropriate value axis manually.

There are also three types of value axis available:

- **Value axis** - displays the graphs of all trends in absolute values mutually comparable.
- **Percentage axis** - individual graphs are displayed in the whole range of the value axis according to the actual local maximum (100%) and minimum (0%). Values on the axis are therefore expressed in percentages of this range.
- **Logarithmic axis** - graphs are displayed only in positive numbers, values are recalculated as a decimal logarithm of the given number and displayed similarly to the value axis. The grid is displayed in the same way. This can be useful when displaying quantities of sensors with a logarithmic course, e.g. pressure.

Graphic display of trends allows for the case of displaying two trends with lineally different range, to display the secondary value axis and any trend simply added to this secondary value axis. Adding a given trend to the primary or secondary value axis is implemented in the key by tapping the left mouse button on the arrow in the example line.

Tip!
You can go back to the display of the whole range quickly on the axis (cancel cutout, enlargement) by clicking the button with the symbol of the green square *for the relevant axis.*

Primary and secondary value axis

In the trend key next to the example line there is an arrow displayed which goes towards the values axis to which the

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given trend is associated. By default, all trends are associated with the primary axis, the secondary (right) axis is not displayed. The exception is with binary trends, which are always associated with the binary axis, which automatically shows on the right next to the trends field.

A secondary (right) value axis acts exactly the same as the primary axis (left). Its type, ranges, etc. can be set by selecting Properties.

Tip!
The association of trends to the value axis can be changed in the properties, or quickly with a double click on the example line of the trends. The secondary axis is automatically displayed or hidden if at least one trend is associated with it.

4.6.5 Value and time measuring cursors

The window for the browser of graphic trends can contain value and time measuring cursors. These cursors serve for precise subtraction of values and times from graphs. Switching on/off the display of measuring cursors can be done by clicking the symbol in the operating components of the time axis.

Time and value measuring cursors are made up partly of a cross-hair cursor and from a box displaying the calculated value on the time or value axis. The difference in values of both measuring cursors is displayed in the box between both measuring cursors.

Dragging the cross-hair cursor or the value indicator of the cursor can shift the cursor to any place in the time or value axis and subtract the required value. Dragging behind the indicator of the difference can shift with both measuring cursors at the same time without changing their distance.

Locking the time and value cursors

The time and value cursor can be locked in a selected position. Locking the cursor is implemented by tapping the left mouse button on the indicator of the value of the cursor. The locked cursor remains (for example when enlarging a specific area of the graph) on the selected value, whereas an unlocked cursor stays in the selected position within the screen.

4.6.6 Properties of the graphic display

The properties of the display of graphic trends can be set in a dialogue window, which can be initiated by pressing the Properties

button in the toolbar or the same option from the floating menu opened by right-clicking the mouse anywhere on the desktop.

In this dialogue you can set:

- **Key** - Switching on/off the display of the key, or individual key items.
- **Grid** - Switching on/off the value and time marks and lines, setting their colours, width and spacing.
- **Trends** - Setting colour and width of line for plotting individual trends, assigning to a primary or secondary value axis.
- **More** - Setting the background colour, switching on/off the bubble help in the key and the grid, switching on/off the display of the binary axis.
- **Print** - Setting the title, headers and footers when printing graphic and text trends.
- **Value cursors** - Switching on/off the display of the value measuring cursors, setting colour, setting locks.
- **Time cursors** - Switching on/off the display of the time measuring cursors, setting colour, setting locks.
- **Y axis left (primary)** - Switching on/off the display of the left (primary) value axis, changing the type of axis (value, percentage, logarithmic), setting the manual range of the axis.
- **Y axis right (secondary)** - Switching on/off the display of the left (primary) value axis, changing the type of axis (value, percentage, logarithmic), setting the manual range of the axis.

4.7 Text Trends Browser

Text trends are for displaying the progress of the technological quantities in table format. After selecting the displayed trends and time interval, the values are shown organised in a table, where the columns correspond to individual trends, and the table rows represent values taken at the given time.

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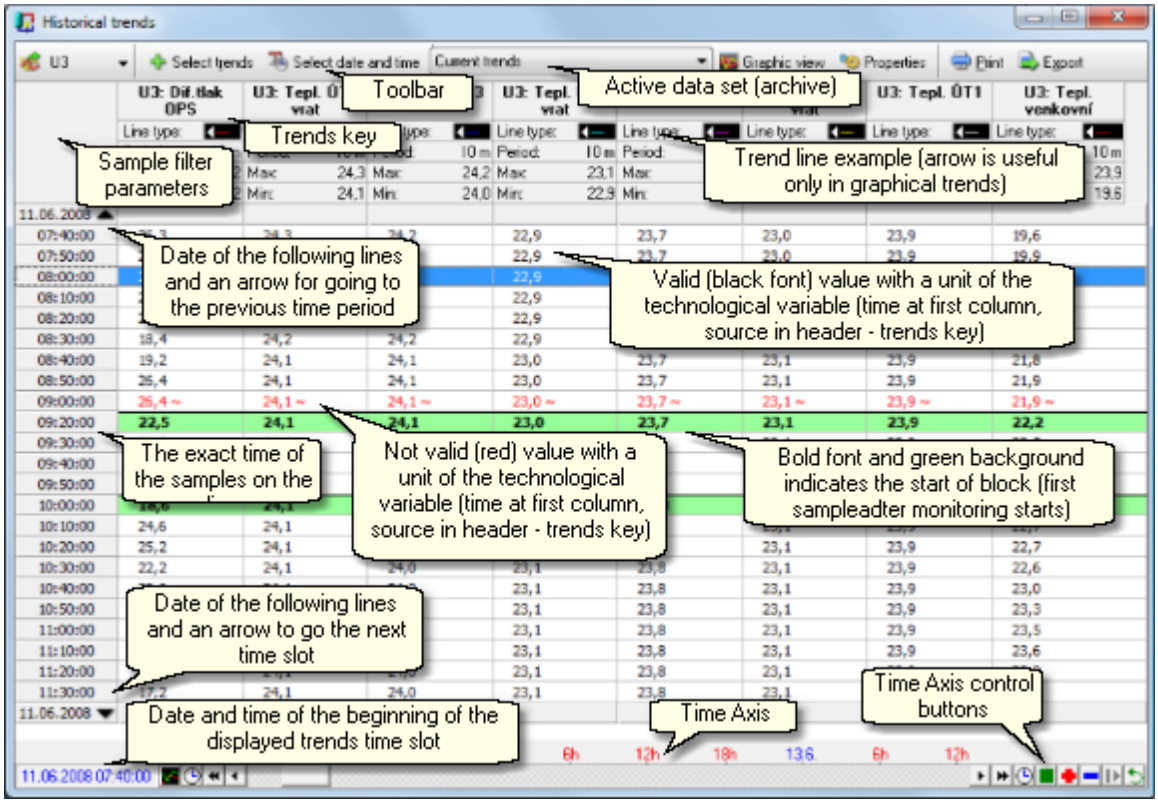
4.7.1 Description of the text trends window

The window for the browser of text trends is made up of several parts. The description of individual parts of the window for the browser of text trends is described in the separate chapters.

- **Toolbar** 39 - joint operating components for graphic and text display of trends
- **Key** 48 - name of trend and its most important parameters
- **Table with times and values of samples** 47 - table containing trending values
- **Time axis scrollbar** 48 - scrollbar for moving in the time axis
- **Operating components of the time axis** 48 - operating components for work with the time axis

Textual display of historical trends


Historical trends
Toolbar
Active data set (archive)
Trends key
Sample filter parameters
Trend line example (arrow is useful only in graphical trends)
Date of the following lines and an arrow for going to the previous time period
Valid (black font) value with a unit of the technological variable (time at first column, source in header - trends key)
The exact time of the samples on the
Not valid (red) value with a unit of the technological variable (time at first column, source in header - trends key)
Bold font and green background indicates the start of block (first sampleadter monitoring starts)
Date of the following lines and an arrow to go the next time slot
Time Axis control buttons
Date and time of the beginning of the displayed trends time slot
Time Axis

The window for the browser of text trends is made up of several parts. The description of individual parts of the window of the browser for text trends is described in separate chapters.

4.7.2 Table of text trends

In this part of the window of text trends the select trends are listed. The **list format** in the text trends is governed by setting the list format of the given technological variable. This list format is set in the configuration part of the ProCop visualisation system, it is not user adjustable. Optionally in the properties you can set whether the **unit for each quantity** is displayed. This is also not adjustable by the user, it is defined in the technological project.

If **invalid** samples are displayed, they are listed in **red** and the sample value is followed by the symbol ~. Invalid samples arise when saving an invalid value of a technological variable. The value of the technological variable is invalid, for example, when there is a communication failure for a longer period of time than the set validity period for these technological variables, etc.

Each data block is **separated by a green** tinged line. The data block is understood to be a related area without setting monitoring. Data blocks in trends start, for example, during a monitoring failure (ending the monitoring by the user, computer restart, power supply failure, stopping or closing the monitoring project, etc.). A **grey line** separates individual days.

On the left, the sample times are displayed. In the event of calculating consumption, time periods may also appear here.

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4.7.3 Time axis of text trends

The time axis is composed of several parts.

- **Rapid access buttons** - for quick switching of the display mode and switching displayed measuring cursors:

  Switching to graphic display of trends

- **Scrollbar for time axis** - for the shift of the displayed cutout in the range of the time axis when enlarging a specific time area. The scrollbar also contains these icons:

  Increasing the range of the time axis to the past

  Shift of enlarged cutout to the past

  Enlarged range of value axis to the future

  Shift of enlarged cutout to the future

  Setting the time start/end of the time axis

- **Operating components of the time axis** - for enlarging or shrinking the range of the time axis, or stopping the automatic shift of the time axis.

  Enlarging the cutout to half the current cutout

  Shrinking the cutout to double the current cutout

  Displaying the whole range of the time axis

  Indication of the automatic shift of the time axis, stopping shift

  Indication of stopping the time axis, switching off automatic shift

  Return to the previous range of the time and value axes

- **Time axis** - Displays the current time mark on the time axis. By marking the part of the time axis with the mouse it is possible to enlarge the selected area to the whole width of the display area. When enlarging the area of the time axis the automatic shift of the time axis is stopped at the same time.

4.7.4 Properties of text trends

Properties of the display of text trends can be set in a dialogue window, which can be initiated by pressing the button Properties in the toolbar 39 or by the same selection from the floating menu opened by right-clicking the mouse on the desktop.

In this dialogue you can set:

- **Key** - Switching on/off the display of the key, or individual key items.
- **Trends** - Setting colour and width of line for plotting individual trends, assigning to a primary or secondary value axis.
- **More** - Switching on/off the bubble help in the key. Other selections in this menu are related to the graphic display.
- **Print** - Setting the title, headers and footers when printing graphic and text trends.

4.8 Trends key

The trends key contains a list of all the currently displayed trends.

In the key it is possible to display these parameters:

- **Trend name** - Item containing descriptive name of trend.
- **Example line** - Example line which is plotted by the trend. The arrow at the end signifies to which value axis the trend relates. By double clicking you can associate the trend from the secondary axis and back.
- **Trend period** - Current period of sampling the given trend.
- **Maximum trend** - Maximum value of trend from currently displayed interval.
- **Minimum trend** - Minimum value of trend from currently displayed interval.
- **Measured values** - Trend value in points where time measuring cursors are positioned.

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Tip!
A list of items for trends can be switched on or off by selecting Properties, More *tab.*

Left panel of the key in text trends

In the left part of the key in the text trends additional information about filtration of displayed samples is shown, with period of filtered samples and maximum time tolerance of samples from required periods during their absence. Also information, if the consumption is displayed - difference between the following from the previous sample, not the original value.

Assigning to primary/secondary value axis

By double-clicking the left mouse button on the left or right end of the example line, you can switch the trend assignment to the primary (left) or secondary (right) value axis.

Changing the order of trends

Clicking on the key to any trend and dragging to a new position on the left or right can influence the order of trends in the key and also orders the trends for plotting.

Displaying detailed information about a trend

When stopping the mouse cursor over a trend in the key, further detailed information about the trend such as data type, trend variable, trend file, minimum and maximum number of samples, hysteresis, etc.

Further options

Right-clicking on the key for a selected trend displays the floating menu with the options:

- adjust properties of displayed trend (colour, type, lines)
- adjust key properties
- add another trend to the list of displayed trends
- remove the selected trend from the list of displayed trends
- switch the trend assignment to primary or secondary value axis

4.9 Printing trends

The displayed text or graphic trends can be printed at any time on the selected printer. Start printing by clicking Print on the toolbar. In the dialogue displayed you can select a printer other than the default one to print, or set further print parameters (page orientation, print quality, etc.).

The letter size for printing text trends is set in the dialogue Properties under the More tab. This dialogue is opened by clicking the Properties button in the toolbar. You can print all the rows in the table of trends or just the ones you select.

- **Print all rows in table of trends** - all displayed rows are printed if one or no table row is selected
- **Print selected rows in table of trends** - selected rows are printed if their number is greater than one

User-defined headers, title and footers

In the trend properties in the Print tab, you can define two rows of user-defined headers, among them the title and one row of user-defined footers. In the case of modification compared with basic or blank settings these setting for adjustment are displayed prior to each specific print run.

Each row is composed of three pairs of texts. The first of the pairs is printed in bold. The texts are positioned in pairs on the left, middle and right on the page. The title is located in the centre of the page between two rows of headers. The footer is positioned at the bottom. If only one text from a pair is completed, the whole thing is aligned to the left, centred or aligned to the right depending on the position.

In the text trends the title and second header is printed only on the first page. The footer is only on the last page.

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Each row can contain predefined text combined with one or more variables, which are replaced with the value only when printed:

- **%TEMPLATENAME%** - name of the template setting
- **%USER%** - logged-on user
- **%DATE%** - current date
- **%TIME%** - current time
- **%DATEFROM%** - date of the start of printed trends
- **%TIMEFROM%** - time of the start of printed trends
- **%DATETO%** - date of the end of printed trends
- **%TIMETO%** - time of the end of printed trends

Tip!
Variables can be used on the row several times, added to with any text, e.g.

```
Printed on %DATE% ............
```

Note
Print settings are saved in a template. It is possible therefore to define and save the required template, for example, for the calculation of monthly consumption with the descriptions and name and in this way document the subtracted values from the measuring gauges.

4.10 Exporting trends

With the Export button in the toolbar of the trends window you can export the selected samples to a file, which can then be further processed, for example in text editors, or table calculators and databases.

It is first necessary to select a file into which the data should be exported.

It is further possible to select various parameters such as:

- **Export header** - allows export of the header for trend columns
- **Export date** - exports the date as well
- **Unit in header** - adds unit in header
- **Unit for each value** - a unit given for each value (during import may interfere with calculations)
- **Prefixing columns** - selects marks for prefixing individual columns
- **Column separator** - allows the option of separating columns with commas, spaces and tabs
- **Numerical format of date and time** - allow numeric processing after import into table calculators
- **Text format of date and time** - is immediately readable, not possible to process further
- **Export invalid samples** - chooses whether to export invalid samples as well and how to identify them

Tip!
Exported data can be used for processing in foreign systems or office applications, e.g. Microsoft Excel, etc.

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5 Alarm Browser

The alarm browser allows staff to display a list of alarm reports, events and system events for the monitoring system ("alarms"). It is a part of the ProCop Toolbar which makes the function of the monitoring and visualisation system clear and easy to access.

The alarm browser can be opened by pressing Alarms, or in the advanced menu 15 by selecting View ▸ Alarms. You can also initiate trends at any time with the keyboard shortcut ALT+A.

Alarm reports arise mainly in the data server, which interprets the data part of the monitoring project. The data server evaluates conditions for an alarm to be raised and in the event of fulfilling these conditions it generates an alarm report. The specific list of alarm conditions is defined in the monitoring project in designer mode. This forms a configuration part of the ProCop visualisation system. Working on the program in the monitoring mode does not, however, require knowledge of the designer part.

5.1 Alarms, Events, System Events

Differences between alarms, events and data in the system record log are only significant:

- **Alarms -** these are information about error or out-of-tolerance states of quantities or technical means; signify states and situations for which the staff must be notified, or to which they must react in a specific way, because if not it can lead to an emergency situation.
- **Events -** these are reports without a warning or alert nature, but have informational and additional functions; they make it known that certain states have been achieved or that a defined situation has occurred or an intervention was implemented in the technology by a user setting values.
- **System events -** a summary of records from internal system states and reports from internal diagnostics; for regular staff it has no importance, it is just for the systems administrator, e.g. for locating errors or diagnostics of interventions by specific users.

The buttons Alarms, Events and System allow you to select which of the records are displayed together.

The operation and control of alarms, events and systems does not differ, so all three types of information will continue to be described together. For greater brevity, we will talk together about alarms or alarm reports, but it should be noted that we always mean events and system events too, unless expressly noted otherwise.

5.2 Unconfirmed & Current Alarms, Service

All alarms delivered to the alarm server can be displayed in the alarm service. However, for staff it is often extremely important to display a list of newly arrived alarms, or a list of alarms which still exist.

For greater clarity, they are divided into three views:

- **Unaccepted -** displays a list of alarms not yet confirmed by staff. With the button Accept, or the option in the local menu you can accept one or several unaccepted alarms. An accepted alarm is acknowledged and will no longer be displayed in the list of unaccepted alarms. Confirmation of alarms has no effect on the list of Current alarms or the service. The confirmation time and currently logged-on user is observed with the alarm.
- **Current -** an alarm report that has occurred and not yet expired and can be displayed by switching the view to Current. If verified that the alarm no longer exists and has not yet expired despite that or it is a known long-term state, you can Cancel it with the appropriate button. The reason can be, for example, removing a device, sensor or expiration of the alarm when monitoring is switched off (for some devices). Cancelling an alarm has no effect on the record about an alarm in the service view.

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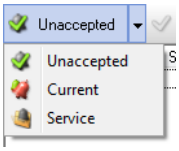
- **Service -** in the service view all alarms (events, system events) are always displayed unless some other filters are active. The service is used for supervising any documented state which has occurred in the monitoring system. If the list is already long, it is possible to Delete it from the given alarm back. You can only delete those alarms previously archived from the regular database. Alarms, events and system events will be deleted from the regular database, but they are still available in the archive for an individual month, which we can switch to by selecting the displayed set 43.

Local menu with choice of view for alarms database



Note

*An alarm, event or system event **CANNOT** be definitively deleted from the system; they are always archived, and archives cannot be modified.*

5.3 Description of Alarm Browser Window

The window with the list of alarms contains alarm reports matching the required filter. At the top of the alarm browser, there is a set of buttons to work with the list of alarms.

The alarm toolbar allows:

- Selection of displayed list of alarms 51
- Button for acceptation 53, cancellation 54 or deletion of alarms 54
- Selection of alarm set 53
- Filtration by alarm type 51
- Filtration by occurrence time, source or priority of alarm 54
- Printing 56 of alarms by the set parameters
- Zoom for enlarging alarms to improve readability

Alarms bar: Display option, acceptation, displayed set, selection of alarm type, events, filtration, printing, export and zoom to enlarge

Available information about the alarm

In the list of alarms, this information about the alarm is optionally displayed:

- **Type** - type of alarm report (alarm, event, system event).
- **Id** - alarm identifier - serial number entered into the alarm database.
- **Date** - date of the alarm.
- **Time** - time of the alarm.
- **Source** - source of the alarm (usually the name of the controller or part of technology).
- **Write date** - date of arrival of the alarm at the alarm server.
- **Write time** - time of arrival of the alarm at the alarm server.
- **Level** - Alarm level (1-origin, 0-expiry).
- **Priority** - One of five levels of the alarm priority (very low, low, medium, high, very high).
- **Text** - Text describing the given alarm or event.
- **Accept date** - Date of confirming the given alarm.
- **Accept time** - Time of confirming the given alarm.
- **Accepted by** - Name of the user who implemented the confirmation of the given alarm.
- **Note** - Text entered when confirming alarm.

Alarm column headers

The header for alarm list columns allows:

- Double clicking changes the classification 56 according to the selected column, and when repeated then

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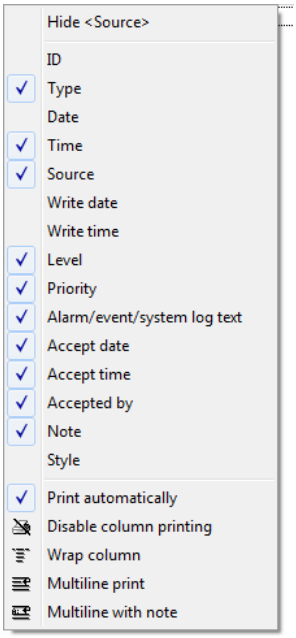
reverses the order of classification

- Right clicking the selection of displayed columns and the method of printing the column

Local menu of the "Source" column



Right clicking the mouse on any column header displays the local men which allows you to display/hide any column and set the method of printing the column.

Printing columns

Methods of printing 56 **columns:**

- **Print automatically** - the column is printed with the set width
- **Disable column printing** - the column is not printed
- **Wrap column** - wraps text within the width of the column in several rows, a further alarm will be indented so that it does not cover the wrapped text
- **Multiline print** - selected column will be printed as another row (not a column) under the appropriate alarm
- **Multiline with note** - selected column will be printed as another row under the appropriate alarm; at the start of the row the original name of the column will be written - suitable for columns with long text (alarm text, note)

5.4 Selection of the Displayed Set

The alarm server provides the option of automatic archiving and backup of alarms.

When browsing alarms you can switch at any time from browsing the current file of alarm reports to browsing the archive of alarms for the given month and year. Selection of the displayed alarm set can be implemented by changing the selection in the list of available alarm sets.

Note

If an alarm set other than the "Current" one is selected, it is not possible to implement any adjustments to the alarms, such as confirmation, resetting, deletion, or changing the note.

5.5 Accpeting Alarms

Every alarm that arrives at the alarm server needs accepting. Confirmation of alarms is an event carried out by control centre staff. With alarm confirmation, the staff indicate to the alarm server that the given alarm report has been acknowledged.

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Procedure for confirmation of alarms:

- For confirmation of the given alarm it is first necessary to display the list of unaccepted alarms 51 in the alarm report window by choosing Unaccepted.
- It is further necessary to mark all the alarms we want to confirm and then click the Accept button.
- When accepting alarms, for each accepted alarm the date and time of confirmation and the name of the currently logged-on user who has confirmed it are recorded.

Notes

Confirmation of alarms can also be implemented by right-clicking the mouse on selected alarms and by choosing Accept *or* Accept with note. *When confirming with a note, it is possible to enter any text. This text is recorded in the "Note" column for the confirmed alarms.*

It is not possible to confirm alarms in the archive, only if the selection of the set of alarms is switched to "Current".

5.6 Cancellation of Alarms

For multi-level alarms, in exceptional situations it can happen that an alarm was sent to the alarm server, but despite the alarm already having rung, a report about the alarm occurring does not reach the alarm server. In such a situation it can happen, for example, when adjusting a monitoring project, etc. In such cases it is necessary to cancel the alarm manually.

When cancelling an alarm, a missing alarm report about the alarm finishing is sent to the alarm server, with information that it is about "Resetting" an alarm. Cancellation of an alarm has no relation to deleting an alarm.

Procedure when cancelling an alarm:

- To cancel a given alarm, it is first necessary to display the list of current alarms 51 by selecting Current in the window of alarm reports.
- Cancellation of an alarm is carried out in the list of existing alarms by pressing the Cancel button.
- When cancelling an alarm it is possible to enter text with more information. To this text the name of the user currently logged in is added and it is recorded in the note column.

5.7 Deletion of Alarms

Due to securing the system against unwanted interventions, the alarm browser does not allow alarms to be deleted freely, only all the alarms older than the selected alarm. Alarms which have not yet been archived cannot be deleted at all. An alarm therefore cannot be definitively removed from the system. It will always be available in one of the monthly archives.

Deletion of alarms is implemented in the service list of alarms 51 by clicking the Delete button.

Notes

To prevent an unwanted increase in size of the alarm reports file, when filling the alarm reports database to the given limit, the oldest alarms are automatically overwritten with new ones. To search for older alarms, there are the alarm archives 53

It is not possible to delete alarms which have not yet been archived. The Delete *button is inactive.*

5.8 Filtration of Alarms

In the list of alarm reports, only alarms matching the required filter are displayed.

Apart from the basic filtration of alarms by alarm type 51 you can further filter alarms by:

- **Date and time occurred** - only displays alarms with date and time of occurrence in the selected interval
- **Source** - only displays alarms from selected sources
- **Style** - displays alarms in the given style (communication, alarms, warnings)
- **Priority and level** - only displays alarms with the selected or higher priority

Filtration of alarms by these criteria can be switched on or off in the dialogue after clicking the Filter button. You can change the settings without switching a filter on or off with the Settings button.

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Tip!

Filters can be switched off individually by deselecting filters individually or in batches with the Filter *button. A pressed button symbolises that filters are active. The normal button state then means that filters are dormant.*

Filtration by time of alarm occurrence

Ticking the Time option in the dialogue window Setting a custom filter turns on a filter by the time of the alarm and displays the tab of the same name. It is possible in the tab to select one of the defaults scales set by the filter by time of occurrence to the scale from several days back up until the present time, or a custom scale.

In this case it is necessary to enter the date and time of the start and end of the required interval in which the alarm occurred. Alarms occurring outside of this interval will not be displayed.

Filtration by source

Ticking the Source option in the dialogue window Setting a custom filter turns on a filter by the source of the alarm. A tree of sources that an alarm (event, system event) has already reported is displayed. Alarms, with the ticked source in the tree, are displayed in the list of alarms, while unselected ones are not.

The buttons All and None can mark or cancel the marking of all available sources in the tree.

Filtration by alarm style

Each alarm, event and system event has an alarm style assigned to it. This style specifies how, in which colours and when the alarm will be displayed, etc. Based on the alarm style, various events can be implemented upon occurrence or expiration of an alarm. **Styles relating alarms with the same properties** but with a different origin, such as communications alarms, alarms that launch a siren, send to an SMS, events about setting values, etc. The name and description of the style is introduced in the list. Only the styles which have already occurred in the alarms are displayed.

Ticking the option Style in the dialogue window Setting a custom filter turns on a filter by the style of alarm.

By ticking individual rows (styles) we define which alarms will be displayed with which style.

The buttons All and None can mark or cancel the marking of all available sources in the tree.

Communications alarms are the kind of reports which do not come from the technology but can occur during faults in data transfer between machines, measuring and the ProCop monitoring system. With the buttons you can permit or forbid their display - marking or deselection of the appropriate styles is implemented.

Filtration by priority and levels

Ticking the option Priority and level in the dialogue window Setting a custom filter turns on a filter and displays the appropriate tab with its setting.

Alarms currently have five priority levels and we can filter them according to the with intuitive settings of the filter selection.

Alarms also have a level which defines their activity:

- **Activity = 0** - Alarm has rung, is inactive, return to normal, expiration
- **Activity >= 1** - Alarm has expired, changed level, exists still

Note that alarms can also take on higher values of the activity depending on the different controller types, but it always refers to a serious fault, not a normal state.

With the OK button we confirm the change in the settings for filters and we switch on the filter and the dialogue window closes. With the Cancel button we cancel all the adjustments, and everything stays in the original state.

Tip!

At the same time as the above filters, filters for displaying alarms, events and system events 51 *are also active, but also Unaccepted existing and service alarms* 51*. It also applies with the selected set (archive)* 53*, from which the given alarms are displayed. You should not forget to set these other filters correctly too, to get the correct result.*

Tip!

If we want to get all the settings in the initial state, it is enough to display another browser (displays, trends) and go back

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to the alarms.

5.9 Sorting Alarms

Alarms can be sorted in **ascending** and **descending** order by all columns. Just click on the **header of the appropriate column** and the alarms are reordered according to the selected column. The column and direction of sorting is indicated by a grey arrow on the left in the column header, by which the records are sorted. By clicking the mouse again, you can reverse the order the alarms in the same column.

Filtration of alarms is retained when sorting changes, and pre-filtered records are sorted. Columns containing the date and time only allow sorting by the date and time at the same time. The arrow is already indicated for the column with the date.

Note
The column by which the list is sorted is marked in the header with an arrow, which also indicates ascending or descending order.

Classifying new alarms

By default, sorting is set so that the alarms are classified by date and time of occurrence in descending order, so the newest alarms are in the first row, then followed by the older alarms. The oldest ones are at the end of the list.

Due to the possible differing communication delays in transfer, it is possible that the alarm is delivered to the server later than an alarm that occurred after it and is therefore sorted to the middle of the list. The Date and time of arrival at the server column (may not be displayed) give the time of the server when the alarm was delivered and recorded in the database.

Note
If an alarm has occurred in the technology a while ago and is only delivered to the visualisation now, it is sorted by the date and time of occurrence. Alarms also have the time of write at the visualisation recorded, which can be displayed by selection of the appropriate columns 52

Tip!
If we want to get all the settings in the initial state, it is enough to display another browser (displays, trends) and go back to the alarms.

5.10 Printing Alarms

Printing alarms, events and system events can be carried out on printers which are available in the Windows operating system to the ProCop user. The network printers can be connected in the advanced menu 15 of the ProCop Toolbar by selecting Connect network printers. For the printer settings then select Setup printers.

Methods of printing columns

In the header of individual columns, small icons can be displayed that signify the print format for individual columns. The format option is carried out by right-clicking the header of the appropriate column. This procedure and meanings can be found in the description of the alarm browser window 52.

Selecting alarms for print

If we want to print just a restricted range of alarms, before clicking the Print button, we first select the rows. We do this by left-clicking the mouse and dragging it over individual rows, marking the first and last row while holding down the Shift, button, or selecting individual rows with the mouse while holding down the Ctrl button.

Similarly, you can also select the range of the alarms for printing by using the keyboard cursors combined with the Shift, button in accordance with Windows operating system usage.

Preview and printing of alarms

In the bar over the name of the alarm columns there is a Print button available, which displays the system dialogue window to select the printer and setting print parameters (format of paper, orientation, quality, etc.) and displays the

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preview of individual pages of paper with alarms.

In the preview, you can select the size of the page display, browse individual pages, adjust printer settings and with the Print button print the required pages. Close the preview using the Close button.

5.11 Export Alarms

With the Export button it is possible to save all the displayed or selected alarms in a CSV file. This can then be further processed, e.g. in table calculators, or text editors.

If we want to export just a restricted rang of alarms, before clicking the Export button, we first select the rows. We do this by left-clicking the mouse and dragging it over individual rows, marking the first and last row while holding down the Shift, button, or selecting individual rows with the mouse while holding down the Ctrl button.

Similarly, you can also select the range of export alarms by using the keyboard cursors combined with the Shift, button in accordance with Windows operating system usage.

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6 Module Control

The ProCop Toolbar allows communications to be managed with individual devices with the appropriate permissions.

Module control can be opened by pressing Module control on the toolbar or in the advanced menu 15 by selecting View ▸ Module control. You can also initiate the module control window at any time with the keyboard shortcut ALT+M.

Communications paths and modules from the ProCop monitoring system display their current states, addresses, periods for updating data, or volumes of transferred data and other information. It is also possible to force refresh of values 59, download trends from the concentrator, and refresh their project even outside of the normal update period. It is also possible to remove communications modules disconnected from the controllers or measuring gauges from the periodic refresh, or, vice versa, include it in the permanent update 59, for example, when starting up a station.

6.1 Module Update

For input and output of data to a monitoring system, special program blocks called "input/output modules" are used. These modules communicate with the technological devices, usually via protocols and communications paths, by which they ensure the supply of current values of technological quantities and in return allow staff to operate technological devices.

For management of "input/output modules", ensuring the state of communication or setting their parameters, there is a special service window.

The window contains a tree list of all connected communications modules and paths together with their names, information about their state and several buttons. The buttons allow communications to be launched or stopped, the module monitor to be opened and parameters of a selected module to be set.

Buttons for service of input/output modules

These buttons always cover the marked modules:

- Start – Launching communication (refresh of values) with connected devices outside of the usual period of making contacts. If the communication path is shared by several devices, this request for communication has the highest priority. If "Disable update" is set, "Normal update" mode is set automatically upon pressing the Start button.
- Stop – Stopping communication with the device. A further connection will run during the next regular period or upon pressing the Start button.
- Normal update – The normal mode establishing contact and refresh of values in regular predefined intervals.
- Disable update – Forbidding communication with the given device. If at that point in time communication with the given device is underway, the communication ends the same way as when pressing the Stop button.
- Permanent update – Refresh of values takes place continually without ending the connection with the controller. If the device is not communicating at that point in time with the control centre, it starts communication just as with pressing the Start button.
- Find - With this button you can search for modules by name, which can be useful in extensive monitoring systems with hundreds of modules.

Any of the mentioned operating buttons can be inactive. This way the "input/output module" tells users that this function is not necessary for their activities and the function is not supported.

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Tip!
Modules can also be selected in batch format and the appropriate action such as Start *can be performed in batch mode - launching communications or changing the refresh of values.*

Important warning!
Permanent update can result in higher fees for the transferred data, if they are paid.

Disable update entirely cancels all communication with the device and until the module is included back in the normal update, no data (or trends or alarms) will be available.

6.2 Advanced Functions in the Module Local Menu

You can initiate the advanced menu upon selecting one or more modules and right clicking the mouse. If selecting several modules, however, there are only basic functions available as described above.

Advanced functions from the local menu of certain modules:

- Request for modules (import from other control centre) - implements refresh and addition of modules from imported control centre (useful if automatic import of modules is forbidden).
- Request for displays (import from other control centre) - implements refresh addition of modules from imported control centre (useful if automatic import of modules is forbidden).
- Disable/ Enable trends transfer (import, AlfaBox) - with further connections historical trends will (not) be transferred - speeds up communication, significantly decreases amount of transferred data.
- Request for trends (import, AlfaBox) - forces transfer of trends since last transfer of trends (trends can be transferred with another period than the date).
- Request for all trends (import, AlfaBox) - forces transfer of all available trends (large volume of data, can take a long time).
- Disable/ Enable alarms transfer (import, AlfaBox) - with further connections alarms will (not) be transferred.
- Request for alarms (import, AlfaBox) - forces transfer of alarms since last connection.
- Request for all alarms (import, AlfaBox) - forces transfer of all available alarms (large volume of data, can take a long time).
- Remote reboot (AlfaBox) - forces remote restart of AlfaBox (AlfaBox may not respond for several minutes depending on connection type).
- Update project (AlfaBox) - implements update of the monitoring project in AlfaBox (useful if the automatic update for the project is switched off in AlfaBox).

Important warning!
Advanced functions of the local menu for trends can have significant results on the transferred volume of data, functionality of the monitoring part of the technology, availability of data, trends, alarms and displays. Without detailed knowledge or recommendations, it is not advisable that you use it (nor is it necessary).

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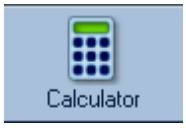
7 Calculator

ProCop Toolbar allows you to use the functions of a calculator, which allows calculations to be implemented over the current values of the technological variables.



You can open the calculator using the Calculator button in the toolbar, or in the advanced menu by selecting View ▸ Calculator. You can also initiate the calculator window at any time with the keyboard shortcut ALT+K.

The calculator is for evaluating numerical expressions. It is formed with a window containing a table. Each cell in this table can contain any mathematical expression made up of constants, operators, functions and technological variables. Each cell in the table may also link to the result from another cell in the table. The entire contents of the table is periodically recalculated with an optional period or on command by the staff.

The syntax used for the calculator operation is the same as the Bára syntax. Furthermore, it is possible to use technological variables in the calculator whose list is initiated by double-clicking the mouse on the entry row of the calculator or by pressing the Insert key.

Adjusting the formula or text of the cell can be done by pressing the F2 key. Deleting the contents of selected cells is done with the Delete, key or by selecting Delete from the local menu.

- If a row starts with a semi-colon or quotation mark, the text is regarded as a commentary and is printed in blue.
- If an expression is written wrong (when compiling an error is discovered in the Bára language expression), or the entered variable is not found, the text is also printed in blue like the commentary.
- If a displayed variable or expression is invalid, it is written in red and its value followed by the symbol "~".

Tip!

The contents of the calculator can be saved at any time with the button Save table under the chosen name for later use. The calculator always opens automatically with the last saved settings. To download and save contents of the calculator, there is a set of icons over the calculator desktop.

Using the right mouse button, you can initiate a floating menu containing in part the event for working with the Windows clipboard, and then you can choose the format of the extract of the displayed expression or technological variable.

7.1 Data Types

To evaluate numerical expressions, the Bára process language is used. This language recognises four types of variables which are closely linked to the types of database variables. Individual data types are mutually incompatible, therefore it is necessary to implement type conversion using conversion function calls.

Data type	*Bits*	*Description*	*Scope*
ANALOG	32	real number	3.4 x 10e-38 ~ 3.4 x 10e+38
BINARY	1	logical values	TRUE, FALSE
COUNTER	32	integer	-2 147 483 648 ~ 2 147 483 647
DISCRETE	8	whole positive number	0 ~ 255
TEXT	-	text chain	-

- **ANALOG**
  four-byte number with floating decimal point (in other languages, e.g. float or real) and with accuracy of 6 to 7 significant digits.
- **BINARY**
  represents only logical values 1 or 0. To record constants of this type there are dedicated keywords 'TRUE' – takes the value of "logic high" – and 'FALSE', which represents the value "logic low or you can

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simply write 1 and 0.

- **COUNTER**
  signed integer, 32 bits long. Constants of this type must be written as a whole decimal or hexadecimal number in the mentioned range.
- **DISCRETE**
  unsigned integer, 8 bits long. This means its range is only 0 to 255.
- **TEXT**
  any text chain

7.2 Expressions and Operators

As mentioned previously, mutually changing the type of variables is only possible using "conversion" functions. These will be described below. Expressions in the language that are strictly syntactic and type controlled are made up of operands and operators. Parts of the expressions with the precedence in the evaluation can be enclosed in round brackets.

Example

```
NOT (PX.KLAPA_POL+5 > Counter2Analog(PX.KLAPA_TEST))
```

Binary operators are implemented that always have two operands: of this type: one in front of the operator and one after the operator. The resulting type of operator together with the permitted types of operands are organised in the table (abbreviations A, B, C & D mean Analog, Binary, Counter and Discrete):

Operator	*Level of operands*	*Types of operands*	*Type of result*
***, /**	1	A, C, D	same as operand
%	1	C, D	same as operand
+, -	2	A, C, D	same as operand
AND, OR	3	B, C	same as operand
>, <, =, <>, <=, >=	4	A, B, C, D	B

For the level of operators these basic rules apply:

- an operand between two operators of different levels is evaluated first by the operator with a higher level, e.g. the expression `5+3*2` is evaluated as `5+(3*2)`,
- an operand between operators of the same levels is transferred for evaluation to the left operator, e.g. the expression `3+2+1` is the same as `(3+2)+1`,
- the part of the expression enclosed in brackets is evaluated as a separate expression with the highest level.

It is possible to consider operands of expressions as:

- constants – simple numeric constants
- variables – identifiers of already declared variables
- function call – identifier of function with appropriate parameters
- expression enclosed in brackets

It is possible to consider numeric constants as:

- decimal integers – sequence of decimal digits `(0, 1, .., 9)`
- hexadecimal numbers – sequence of hexadecimal digits `(0, 1, ..,9, A, B, .., F)`, preceded by the characters '`0x`',
- number in exponential format, which can generally be written as

  ```
  [+|-]XX[.XX][E[+|-]XX]
  ```

  where:
  - the parts enclosed in square brackets are not compulsory
  - the sign may always be used only once
  - 'X' characters mean any decimal digit

Example

```
789             // decimal integer
0xFFFF1111      // hexadecimal numbers
0x01234
0xABCDEF
0xFG            // incorrect record of hexadecimal number
-1.235E+24      // number with floating decimal point
0.01
+2E-02
```

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Example

Negative numbers must be enclosed in brackets in these cases, when two operators follow each other, e.g.:

```
* (-6)
5 - (-2)
```

In the places of operators it is possible in expressions to use the name of technological variables. At the moment of evaluating the expression the momentary value of the variable is reached. We can access the tree of technological variables and Bára function list by pressing Insert key while editing a cell.

Functions are split into three basic groups:

- converse – for transfer between individual data types
- mathematic – for mathematical calculations
- functions for work with the data and time

7.3 Conversion Functions

Conversion functions ensure data conversion between individual types of variables or expressions. Conversions of all data types between each other are available. The name of the conversion function is always created with the name of the parameter type, the figure 2 and the name of the type of value to which we are converting, as is visible in the following table.

Type	*Analog*	*Binary*	*Counter*	*Discrete*
A	-	Analog2Binary	Analog2Counter	Analog2Discrete
B	Binary2Analog	-	Binary2Counter	Binary2Discrete
C	Counter2Analog	Counter2Binary	-	Counter2Discrete
D	Discrete2Analog	Discrete2Binary	Discrete2Counter	-

7.4 Mathematical Functions

Basic mathematical and goniometrical functions working only with the Analog data type are implemented in the calculator.

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Function	Mathematical	Description
Pi	3.1415	Pi (no parameter)
Sqr	x2	square
Sqrt	x 1/2	square root
Exp	ex	Exponential, e to the power x
Pow	yx	y to the power x (two parameters)
Pow10	10x	10 to the power x
Log	log10x	decimal logarithm
Ln	ln x, logex	natural logarithm
Rad2Deg		conversion of radian no. to degrees
Deg2Rad		conversion of degrees to radian no.
Sin	sin(x)	sine x (parameter v rad)
Cos	cos(x)	cosine x (parameter v rad)
Tan	tg(x)	tangent x (parameter v rad)
ASin	arcsin(x)	arcsine x (result v rad)
ACos	arccos(x)	Arccosine x (result v rad)
ATan	arctg(x)	Arctangent x (result v rad)
Abs	|x|	absolute value x
Sign	sign(x)	signum (1 for positive number, -1 for negative number)
Round		Rounding off
RoundDown		Always rounding down
RoundUp		Always rounding up
Min	minimum(x, y)	minimum from specified arguments
Max	maximum(x, y)	maximum from specified arguments
Select	Select(p, x, y)	if the expression p of the value is TRUE, returns x, otherwise y

Example

```
Analog2Counter( 2 * Pi( ) ) - Time > 3
```

7.5 Functions for Date and Time

The last group of functions are those for processing the date and time. The Bára language uses the second date format, i.e. the number of seconds, which have passed since 00:00:00 1st January 1980. The advantage of this method is the possibility of adding and subtracting the date and time. All functions return the Counter type.

Function	Parameter	Description
Year	-	Returns current year
Month	-	Returns current month
Day	-	Returns current day
Hour	-	Returns current hour
Minute	-	Returns current minute
Second	-	Returns current second
Time	-	Returns current daily time in seconds since midnight
Date	-	Returns current date in seconds since 1.1.1980
DateTime	-	Returns current date and time
GetSecCount	-	Returns number of seconds since start of Windows
GetTickCount	-	Returns number of milliseconds since start of Windows
GetYear	date	Returns year from date specified by parameter
GetMonth	date	Returns month from date specified by parameter
GetDay	date	Returns day from date specified by parameter
GetHour	time	Returns hour from hour specified by parameter
GetMin	time	Returns minute from hour specified by parameter
GetSec	time	Returns second from hour specified by parameter

If the specified parameter is the date or time, it is possible to also use the functions of returning date and time together, e.g. DateTime(). Given the internal representation of date information (as number of seconds since 1st January 1980), it is possible to freely add or subtract the date and time.

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Example
If I want to get the date and time:

```
DateTime = Date + Time
```

If I want to get the number of tomorrow:

```
GetDay( Date( ) + 86400 )
```

If I want to get the time an hour after the immediate time:

```
Time( ) + 3600
```

7.6 Link to Value of Other Cells

In the calculator we can link to the resulting values of other rows on the spreadsheet, and indeed via the pseudovariables with the name of the cell $XY, where X marks the letter from the column and Y the number of the row to which we want to link.

Example
If we need to add double the result from cell A2 of the table with the resulting value in cell C12, we use the expression:

```
2*$A2 + $C12
```

The pseudovariables $XY take on the immediate value of the result in the give Xth column Yth row of the table and their data type is the same as the data type of the result of the term of the given cell.

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8 Access Privileges

In order to secure the monitoring system against unwanted unauthorized intervention with the technology, a component is included for administration of access permissions. Every user can get access from the system administrator for a certain range of information together with restricting operational power, i.e. defining those activities which they are permitted to implement. For this, it is necessary for the system staff to identify themselves with their username and password, known only to the user personally.

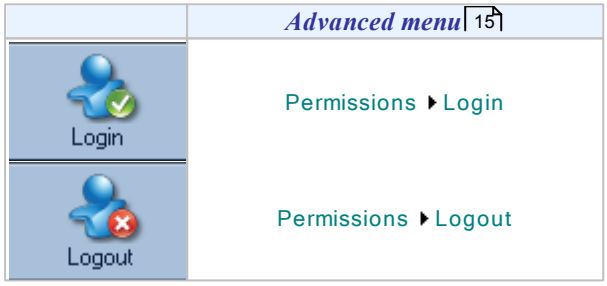
8.1 User Login

Upon launching the monitoring project, either no user is logged in, or the user "Everyone" is logged in, with minimum permissions (depending on the settings of the system). The system therefore, for example, provides only a very narrow range of information, with no option for active intervention in the technology. If staff want to use all the available options, they must, via the advanced menu 15 by selecting Access rights ▸ Login, log in to the system using their username and password, therefore getting access to information and permissions assigned to them by the system administrator.

In the ProCop Toolbar, a fast select button may be displayed to log in to or out of the system.

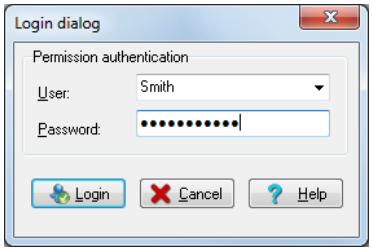
Toolbar buttons

The toolbar buttons and options in the advanced menu for logging in and out of the system.



In the notification area 13 the name of the currently logged-in user, or "Everyone", if nobody has logged in yet.

Dialogue for the user to log in to the system ProCop 3.5



In the dialogue for logging the user in, it is necessary to write or select the username and enter the access password. When writing the password only asterisks'*' (asterisks, points, commas) are shown for security purposes.

- After entering the password press the button Login.
- With the button Cancel you can close the dialogue without logging in.

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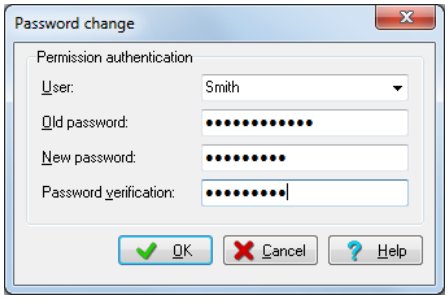
Note
It is possible to log in anytime, without needing to log out, under the new username. Previous access rights are thus cancelled and only the access rights pertaining to the newly entered user are valid.

8.2 Password Change

If necessary, every user can change their personal password at any time using the advanced menu 15 by selecting Access rights ▸ Change password. Periodically changing your password is important for security reasons.

Dialogue for changing the password of any user:



This dialogue allows the user to change the password. To change your password, you must know the current password.

The procedure is as follows:

- In the row User select your login name.
- Write your current password in the Old password row for the selected user.
- Write new password in the New password row.
- Write your new password again for verification in the Password verification row.
- To change the password click OK.
- To close the dialogue without changing the password click Cancel at any time.

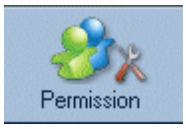
In the dialogue for changing the password it is necessary to enter your username, your original password and the new password with verification, to prevent the password being changed by an unauthorised person or mistyping the new password.

Note
You must remember your password, because otherwise you will not have access to operations defined by the system administrator. Only the system administrator can provide the settings of a forgotten password for a new one in the Permission management 68.

Important warning!
When entering passwords in the ProCop system, for simplicity, it does not distinguish between upper and lower case letters.

8.3 Management of Users, Groups and Permissions

This part describes the control of the administrator of access permissions, which is to define and edit access permissions of users for individual parts of the monitoring project. The administrator of access permissions is part of the ProCop Toolbar, which makes the functions of the monitoring and visualisation system clearly and simply available.



You can open the administrator of access permissions by clicking the Permission button (not displayed by default, see selection of buttons 13), or in the advanced menu 15 by selecting View ▸ Permission management. You can also initiate this management at any time using the keyboard shortcut CTRL+ALT+R.

Note
User management is only available to users with Access Management permissions, by default User Administrator and Designer.

The main window for the administrator of access permissions contains an expandable list of defined permissions 69, users 70, user groups 70 and a list of currently logged-in users 71.

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The right of access to individual parts of the system is not assigned directly to individual users, but a group of users. So that users have the given permissions, they must be a member of the group which has the given permissions assigned.

A newly created user has the password defined automatically as with the username. This initial number can be changed at any time by initiating the advanced menu 15 Access rights ▸ Change password.

8.3.1 Permission list

Permissions in the ProCop 3.5 monitoring system can only be assigned to groups not individual users. A list of permissions can be distributed with further items. In the current version of the system, however, it is not possible to custom define the permissions to parts of the system or the technology.

8.3.1.1 Predefined access areas

In the current version the system differentiates these access areas:

- **Access Management** - management of user permissions and accounts
- **Visual Designer** - using the Visual Designer development tool
- **WebView** - WWW display browser
- **WebControl** - WWW control of technology
- **WebAlarms** - WWW alarm browser
- **WebTrends** - WWW trend browser
- **Change Trivial** - setting values of unimportant technological variables
- **Change General** - setting values of regular technological variables
- **Change Important** - setting values of especially important technological variables
- **Alarm Accept** - confirmation of received alarm reports and events (alarm confirmation)
- **Alarm Service** - access and work in the service mode for alarms, resetting alarms, deleting alarms
- **Logbook Service** - work with the archive of the system log, viewing, deleting or printing it
- **Alarm Management** - access permissions for management of the alarm server - archiving, backup of alarms
- **Module Control** - control of communication with external technical means by managing input/output modules
- **ProCop Options** - permissions for adjusting settings in the ProCop system
- **Trend View** - permissions for viewing graphic and textual historical trends including archives
- **Trend Management** - access permissions for management of trend server - archiving, backup, saving and exporting trends
- **ProCop Exit** - right to exit the ProCop Toolbar client application
- **Debug Scripts** - right to debug Bára scripts
- **Trace System** - right to monitor progress and debugging printouts of the ProCop system

8.3.1.2 Adding/removing privileges

Adding new permissions can be done upon selection of the folder Permissions with the Insert key. Removing permissions can be done upon selection of the appropriate permission with the Delete key.

Note
In the current version of the system, it is not possible to use and assign user defined permissions in any way for parts of the system or technology. All permissions concern the embedded access areas 69

8.3.1.3 Change permision name & description, assigning permisions to user groups

Changing the name and description of permissions, just as with adding or removing permissions to a group of users, is possible in the dialogue displayed upon pressing the "Enter" key or upon right-clicking the mouse in the tree list.

In the dialogue displayed you can switch between the following using the tabs at the top:

- editing of the name and description of the permission
- adding permissions to groups

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8.3.2 Group list

The tree of access permission management contains a Groups branch in which all the available groups in the ProCop 3.5 system are displayed. Several groups are embedded [70], permissions are assigned to groups, not users, and users are assigned membership in any number of groups.

8.3.2.1 Predefined user groups

Except for user defined groups, the list always contains these embedded groups:

- **Administrators** – group of administrators (they have all rights except for Visual Designer permissions, anyone can be a member)
- **Designers** – group of system developers (they only have Visual Designer permissions, only designers can be group members)
- **Users** – group suitable for standard system users (by default the assigned rights can be freely changed)
- **Everyone** – by default a logged-in user (the rights of this group can be freely changed, only the user Everyone is a member)

You can add or remove freely from the defined permissions and define a list of their members (users) for each group.

8.3.2.2 Adding/removing user groups

In the list of user groups you can freely add or remove user groups.

Adding a new group can be done upon selecting the folder Groups with the Insert key. Removing a group can be done upon selecting the appropriate group with the Delete key.

8.3.2.3 Changing group name and description, adding group members

Changing the name and description of a group, as with adding or removing group permissions, or adding or removing a user from the group, can be done in the dialogue displayed upon clicking the "Enter" key or upon right-clicking the mouse in the tree list.

In the dialogue displayed, you can switch between the following, using the tabs at the top:

- editing the name and description of the group
- assigning group permissions
- adding and removing members (users)

Adding or removing permissions is possible upon selecting the group using the Insert key and Delete in the list of permissions (on the right in the main window for access permission management).

8.3.3 User list

Each user can be a member of any number of user groups. User permissions are then given as a summary of permissions of all groups of which the user is a member. In the system, there are always predefined users [70], who are necessary for the system to operate and cannot be removed.

8.3.3.1 Predefined users

Except for user-defined users, the system always contains these users:

- **Administrator** – system administrator (belongs to the group of Administrators and Everyone, i.e. has all rights except Visual Designer)
- **Designer** – designer of the monitoring project (only a member of the Designers group, i.e. only has Visual Design rights)
- **Everyone** – default logged-in user (by default is the only member of the Everyone group; the rights of this group can be freely changed)
- **Anonymous Internet User** – anonymous internet user (by default has no rights, this use can be put in any group and thus can be assigned any rights)
- **Data Server 3.x** – embedded user of the data server
- **Way Server 3.x** – embedded user of the access paths
- **ProCop 3.x** – embedded user of the ProCop Toolbar 3.x
- **ProWeb 3.x** – embedded user of the web extension of the ProCop application 3.x

These users cannot be removed from the system.

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8.3.3.2 Adding/removing users

Adding a new user can be done upon selecting the folder Users with the Insert key. Removing users can be done upon selecting the appropriate user with the Delete key.

8.3.3.3 Changing user name and description, assigning a user to a group

Changing the name and description of the user, just like adding or removing a user from a group, or putting a user in user groups, can be done in the dialogue displayed upon pressing Enter or upon right-clicking the mouse in the tree list.

In the dialogue displayed you can switch between the following tabs at the top:

- editing the name and description of a user
- changing the groups in which the user is a member

Adding and removing a user to/from a group can also be done upon selecting the user via the Insert key and the Delete key in the list of groups of which the user is a member (on the right of the main window of the access permissions manager).

8.3.4 List of logged in users

In the list of logged in users there is a list of users who currently have made a connection with the access permissions server. Apart from the user name it is also possible to find out the computer name (or computer IP address) and the name of the application which made the connection with the access permissions server.

8.3.5 Dialogue Descriptions

This chapter contains descriptions of individual dialogue windows for user permission management. In general it can be said that control corresponds to standard Windows usage controls.

Common meanings of buttons:

- Clicking the OK button saves changes and closes the dialogue.
- Clicking the Apply button saves changes without closing the dialogue.
- Clicking the Cancel button leaves the dialogue without saving the implemented changes.

8.3.5.1 Dialogue for forced password change

If you have the right to administer the list of access permissions, you can change the access password of any user even without knowledge of their current password.

The procedure is as follows:

- In the row User select your user login name.
- In the New password row, write your new user password.
- In the row Verify password write the new password again for verification.
- To change the password click the button OK.
- To exit a dialogue without changing the password, press the Cancel. button at any time.

8.3.5.2 Dialogue for connecting to the access privileges server

Management of the monitoring system permissions can also be done remotely. To connect to a remote server with access permissions, it is necessary to select the name of the computer on which the access permissions server has been launched. If you do not know the computer name, you can use the initiated dialogue to search for it by clicking the Find button.

8.3.5.3 Dialogue for logging on to the access privileges server

To connect to the access permissions server it is necessary to have "**Access Management**" permissions (management of user permissions and accounts), i.e. to know the username and password of the user with these permissions. By default, this user is "**Administrator**" with a blank password.

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8.3.5.4 Dialogue for selecting privileges

The dialogue is for assigning permissions to a user group. In the list only the permissions that the user group does not yet have assigned are displayed.

- If you want to assign more permissions to the user group, select it from the list and click OK.
- By clicking Cancel you quit editing without saving changes (adding selected permissions).

8.3.5.5 Dialogue for adding privileges to groups

This dialogue is for assigning permissions to user groups. In the list, all the defined user groups are displayed. The list contains the name and description of the group. If a group has given permissions assigned to it, the row containing the given permissions is ticked. Adding or removing permissions can be done by clicking the mouse in the tick field or with the Spacebar key.

Note
By assigning the rights to a group gives rights to all members of the given group. If the permissions are removed from the group, they are taken from all users who belong to this group and do not have these permissions assigned by another group.

8.3.5.6 Dialogue for selecting a user group

This dialogue is for sorting users into user groups. In the list only the groups of users which the user is not yet a member of are displayed.

- If you want to include a user in another user group, select the name of the group from the list and click OK.
- By clicking Cancel you quit the editing without saving changes (without including the user in the group).

8.3.5.7 Dialogue with a list of user groups

The dialogue is for including a user in user groups. In the list all the defined user groups are displayed. The list contains the name and description of the group. If the user is a member of the given user group, the row with the given group is ticked. Including or removing a user in/from a group can be done by clicking the mouse on the ticking field or using the Spacebar.

Note
By adding a user to a group, all rights assigned to the group are assigned to the given user. If the user is a member of several groups, then all the rights that are assigned to the individual group are also assigned to the user.

8.3.5.8 Dialogue with a list of members (users) belonging to a given group

The dialogue is for including members in user groups. In the list all the defined users are displayed. The list contains the name and description of the user. If the user is a member of the given user group, the row with the given user is ticked. Including or removing a user in/from a group can be done by clicking the mouse on the ticking field or using the Spacebar.

Note
By adding a user to a group, all rights assigned to the given group are assigned to the user. If the user is a member of several groups, then all the rights that are assigned to the individual group are also assigned to the user.

8.3.5.9 Dialogue with a list of user groups with the given rights

The dialogue is for assigning rights to a selected user group. In the list all the defined permissions are displayed. The list contains the name and description of the group. If the selected group is assigned the given rights,, the row with these rights is ticked. Including or removing permissions in/from a selected user group can be done by clicking the mouse on the ticking field or using the Spacebar.

Note
By assigning the rights to a group gives rights to all members of the given group. If the rights are removed from the group, they are taken from all users who belong to this group and do not have these permissions assigned by another group.

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8.3.5.10 Dialogue for editing name and description of an item

This dialogue is for setting the name and description of an item.

The same dialogue is used to set parameters:

- **user** - name and description of user
- **groups** - name and description of group
- **permissions** - name and description of permissions

8.3.5.11 Dialogue for restricting access

Select permissions for which we want to configure access (WebView, WebAlarm, WebTrends) and select Edit ▸ Edit, the Spacebar, key or the blue key symbol in the toolbar.

A dialogue window opens to configure permissions. Select the tab Restricting access by computer.

At the top is a list of computers and networks from which access is permitted/forbidden. This list is evaluated from top to bottom and evaluation ends when the first condition is met (computer address, network, name of computer), with the exception of the local computer from which access is always permitted.

If none of the conditions is met, access is denied. If the list is empty, access is always denied (with the exception of the local computer).

In the list three types of records can occur with three types of access. Records are in the type **Name** (computer network name), **Address** (computer IP address) and **Network** (IP address of the network and subnet mask). Accesses are **Forbid, Permit, Do not use**.

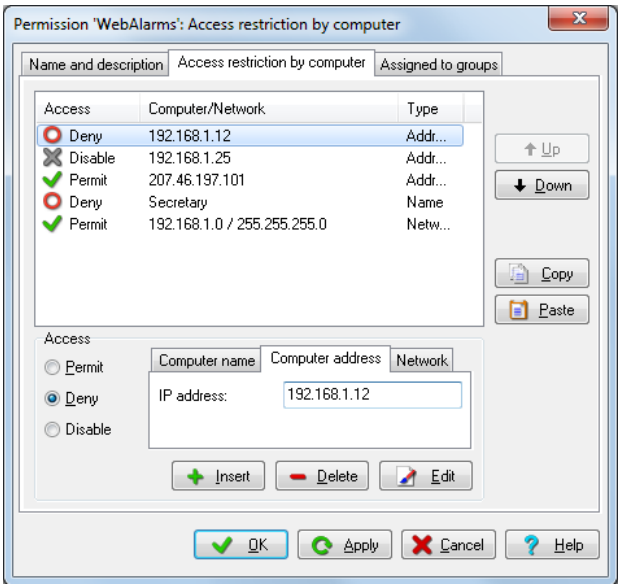
The bottom part of the dialogue window is designed for entering, cancelling and editing these records. On the right the buttons **Up** and **Down**, which allow items in the list to be moved and therefore determine the order of evaluation. The list is always evaluated from top to bottom; the rules **Do not use** are left out and the first rule to which the given computer matches is applied. **If no rule is applied, access is denied from the given computer**.

The bottom part of the dialogue window is designed for entering, cancelling and editing these records. On the right the buttons **Up** and **Down**, which allow items in the list to be moved and therefore determine the order of evaluation. The list is always evaluated from top to bottom; the rules **Do not use** are left out and the first rule to which the given computer matches is applied. **If no rule is applied**, access is denied from the given computer.

Access from computers and networks

The next image documents an example of access settings from the entire local network with the exception of several computers and one computer from another network.

Permission and restriction of access to the ProCopWeb from various computers and networks:



For illustrative purposes, go gradually down the individual rows of the example from top to bottom, as is implemented by the **Access Server** for browser access. The first row **forbids** us access, if we access **from the computer** with the IP address **192.168.1.12**. The second row is skipped, it has no effect whatsoever, acting as temporarily deactivated

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without needing to delete it.

The third row **permits** access **from the computer** with the IP address **207.46.197.101**. The fourth row is interesting, which forbids access **from a computer** with any IP address which is named **Secretary** in the DNS system. We use this option only for dynamic allocation of IP addresses.

The last row finally **permits** us access from all computers on the **network 192.168.1.0** with subnet mask **255.255.255.0**.

Access from a computer which does not match any record is automatically forbidden.

Copying configuration of access between permissions

For easier configuration of access from computers there are Copy and Paste buttons in the dialogue Restricting access by computer.

The Copy button saves the full list of accesses on the clipboard. The Paste button deletes the current list and enters the list from the clipboard. In this way you can transfer configurations between permissions via the clipboard.

If it is useful to have the same or similar access configurations for all permissions, set one permission according to need and copy it to the clipboard. Insert this permission into other permissions and if necessary adjust it according to need.

Important warning!
For safety reasons, we recommend permitting access to the module WebControls only from specific computers, not from the network or even the internet.

Tip!
Detailed information about configuration permissions for web access 74 *is available in the chapter of the same name.*

8.3.6 Web access permissions

ProCop Web is available with permissions for web access. These permissions are verified by the **Access Server**. Configuration of permissions, groups and users is implemented from the ProCop Toolbar by selecting View ▸ Permission management. Web permissions and users are part of the permissions system of the ProCop monitoring system.

For **WebView**, **WebControl**, **WebAlarms** and **WebTrends** permissions it is possible to restrict access only to a specific name or computer IP address, or to the range of addresses defined by an IP address and subnet mask. In this way it is possible to restrict or grant access to the ProCopWeb web visualisation.

Permissions are as follows:

- WebView - allows viewing of the technological display)does not allow values to be set)
- WebTrend - allows historical trends to be viewed
- WebAlarms - allows alarms, events and system events to be viewed (does not allow them to be modified, confirmed in any way, etc.)
- WebControl - allows values to be set in technological displays (users and computers must also have WebView rights)

A user must be included in a group which has the appropriate permissions assigned, to be able to use the given service. A computer from which the user accesses it, must have access permitted for the given permissions.

Note
These permissions are useful only when the control centre makes the web extension ProCopWeb available and it is accessed via Internet Explorer. Otherwise these permissions will not be valid.

8.3.6.1 Configuration of access by web users

Each user group from the ProCop monitoring system can be entitled to access individual modules of the web extension. To this end, the embedded WebView, WebTrends and Web Alarms are available.

If a given user group should have access to view the output of a given module, it is necessary to assign it the appropriate permissions.

Anonymous access to all

For general unrestricted access to the web extension, the **Anonymous Internet User**. This user is logged in from the web extension automatically, but has now default viewing rights.

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If we want to allow viewing of all modules without authentication, we must put the **Anonymous Internet User** into a group, e.g. **Everyone** and give this group rights to view the individual modules WebView, WebTrends and Web Alarms.

First we open the permission management from the ProCop Toolbar by selecting View ▸ Permission management. We must know the administrator password for the ProCop system or a user password with administrator permissions.

Open the branch **Groups**, select the group **Everyone** and edit properties by selecting Edit ▸ Edit, or the Spacebar, in the toolbar the key with the blue key symbol. In the tab Members tick **Anonymous Internet User** putting the anonymous internet user into this group. In the Permissions tab tick the rights **WebView**, **WebTrends** and **WebAlarms** (or just the one which should be generally accessible) and confirm by clicking OK.

We can close permission management by, for example, switching to Displays. Test the access from the web functionality.

Restricted access

If it is necessary to have authenticated access to the website of the ProCop monitoring system, we will proceed in similar fashion to the previous chapter, except the appropriate permissions are assigned to the user group to which however an **Anonymous Internet User** cannot belong for general access.

If, for example, we want general access to be only for viewing technological displays, we again add the **Anonymous Internet User** to the group **Everyone** with the difference that the group is only allocated **WebView** rights.

Similarly, for example, the group **Users** (or others we create ourselves) is assigned all web permissions. We then add already an authenticated user (existing, or created for this purpose) to this group who has access to the entire web extension. These will, on viewing the website, asked to enter a username and password when accessing generally inaccessible modules. The user password cannot be changed via the web extension for security reasons, only from the ProCop Toolbar.

Important warning!
For security reasons we recommend permitting access to the WebControls module only to certain authenticated users with sufficiently complicated passwords and further limit access to be from specific computers, not from the network or even from the internet, using the dialogue for restricting access 73.

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9 Trend Server Management

This part describes management of the trend server, which is for saving historical trends, i.e. the progression of values of technological variables in a time, usually with a defined period, their archiving, backup and export.

The trend server manager can be opened in the advanced menu 15 of the ProCop Toolbar by selecting View ▸ Trend management. Trends can also be initiated at any time with the keyboard shortcut CTRL+ALT+T.

The main window of the trend server manager contains a tree with the following groups:

- **Project** - in the subtree a tree of continuous trends is displayed with parameters which is saved in the trend server
- **Archive** - in the subtree there are archives for individual months and year with trends and parameters which are saved in the database
- **Backup** - in the subtree a tree of continuous trends is displayed with parameters which were saved during the last backup
- **Saved** - in the subtree a tree is displayed of custom saved trends, according to the parameters that were defined at the time of saving
- **Built-in tasks** - individually built-in tasks and their parameters 77, planning and the option to launch them
- **Running tasks** - currently running processes for processing trends, their state and progress; there is always a process here for recording the trend queue in the database - Flush

Note
In trend management you cannot define trends or change periods of their sampling and other parameters. These are included in the monitoring project and cannot be changed without Designer permissions. You can control functions of the trend server here and define export scripts or set parameters for automatic archiving, saving and backup.

9.1 Built-in tasks of the trend server

Built-in tasks of the trend server allow you to plan or custom implement a task directly in the trend server. Typical processes are, for example, archiving, backup or export of trends.

Archive

An embedded process allow automatic archiving of trends to the subdirectory to be planned for individual months, which are further accessible from the trend browser 39. These directories can be custom archived on CD/DVD.

In the planning parameters, the day of the week and time are defined for when the process should be implemented, as well as the number of days retroactively when they should pass. For example, for archiving a collection of data from the stations with which there is only occasional communication (in the order of days or weeks - different measures). It is also possible to set the appropriate path for archiving, or just launch archiving immediately.

After making the adjustments, it is necessary to press Apply, in order to save the settings to the trend server.

Backup

The embedded process allows automatic backup of continuous trends to be planned for the subdirectory just as they are. This backup is mainly for any renewal of the entire database of continuous trends, in the event that they are damaged. Just stop the service ProTrend for the trend server, recopy data from backup to the directory with continuous trends, and relaunch the service.

In the planning parameters, the day of the week and time are defined for when the process should be implemented. It is

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also possible to set the appropriate path for backup, or just launch backup immediately.

After making the adjustments, it is necessary to press Apply, in order to save the settings to the trend server.

Saving

This process allows you to save a specific section of historical trends under a name in the subdirectory, for a certain date and time retroactively. This process can be useful to select and archive a phenomenon that occurred at a given time. It is used especially when using monitoring for quick short-term measuring, where the whole length of the continuous trends is very short due to the speed of sampling (e.g. just hours) and old records would be overwritten.

This process is usually launched dynamically from a technological display.

In the settings, the name of the process is defined under which it will be displayed in the trend browser, the length of the section that will be retroactively saved from the defined date and time. It is also possible to set the appropriate path for saving, or saving can be launched immediately.

After making the adjustments, it is necessary to press Apply, in order to save the settings to the trend server.

Export

Automatic or custom exports of historical trends to a file is for saving values from a given time to a file in any format which is defined with the appropriate script. The process can be planned and implemented automatically at a given time, or launched manually dynamically in the technological display. The preview of the resulting export file is displayed in the last tab. The format of the extract of values can be set from the settings or left as it is set in the monitoring project for individual variables.

After making the adjustments, it is necessary to press Apply, in order to save the settings to the trend server. To edit the script or parameters you must Save, or Save and launch.

Note
The description of the scripting language is not part of this documentation. Scripts are added according to customer requirements with the appropriate monitoring project.

Sleep

Pauses the performance of all other processes in the trend server for a defined period. This is for testing and diagnostic purposes.

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10 Alarm Server Management

This section describes management of the alarm server which is for saving alarms, events and system events ("alarms"). The alarm server allows the database of alarms to be archived after months and backed up.

The alarm server manager can be opened in the advanced menu 15 of the ProCop Toolbar by selecting View ▸ Alarm management. Trends can also be initiated at any time with the keyboard shortcut CTRL+ALT+A.

The main window of the alarm server management contains a tree with the following groups:

- **Archive** - in the subtree there are archives for individual months and years with alarms which are saved in the database
- **Backup** - contains backup copy of the database of continuous alarms
- **Built-in tasks** - individual built-in tasks and their parameters 79, planning and the option to launch them
- **Running tasks** - processes currently running for processing alarms, their state and progression

Note
In alarm management you cannot define alarms or change their parameters. These are part of the monitoring project and it is not possible to adjust them without Designer permissions. You can set parameters here for automatic archiving and backup.

10.1 Built-in tasks of the alarm server

Built-in task of the alarm server, allow you to plan or custom implement a task directly in the alarm server. Typical processes are archiving and backing up alarms.

Archive

An embedded process allow automatic archiving of alarms to the subdirectory to be planned for individual months, which are further accessible from the alarm browser 51. These directories can be custom archived on CD/DVD.

In the planning parameters, the day of the week and time are defined for when the process should be implemented, as well as the number of days retroactively when they should pass for cases when alarms arrive at the server with a delay. It is also possible to set the appropriate path for archiving, or just launch archiving immediately.

After making the adjustments, it is necessary to press Apply, in order to save the settings to the alarm server.

Backup

The embedded process allows automatic backup of continuous alarms to be planned for the subdirectory just as they are. This backup is mainly for any renewal of the entire database of continuous alarms, in the event that they are damaged. Just stop the service ProAlarm for the trend server, recopy data from backup to the directory with continuous trends, and relaunch the service.

In the planning parameters, the day of the week and time are defined for when the process should be implemented. It is also possible to set the appropriate path for backup, or just launch backup immediately.

After making the adjustments, it is necessary to press Apply, in order to save the settings to the trend server.

Sleep

Pauses the performance of all other processes in the alarm server for a defined period. This is for testing and diagnostic purposes.

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11 Toolbar Options

You can open a dialogue window with settings for application parameters, logging in to Windows, setting servers and extension in the advanced menu 15 of the ProCop Toolbar by selecting Special ▸ Options.

Note
The majority of settings appear after exiting the ProCop Toolbar or after restarting the computer.

Tabs with the name beginning Web: are only displayed if the installation type 9 Web server was selected during installation. Settings only effect the access from the web extension of the monitoring system. It is not necessary in other types of installation.

Important warning!
Incorrect changes to the settings of the functional monitoring system may result in the monitoring not working, which can occur after the computer is restarted.

11.1 Automatic Login

In the tab Automatic login in the Settings 81 dialogue window you can permit Windows to launch on startup with the username and password set, without having to enter this authenticating information every time. This parameter is recorded in the registration database. The user, under whose name the monitoring system is launched, must have sufficient access permissions to write this otherwise an error is displayed and automatic login will not be functional.

Important warning!
If automatic login to Windows is turned on, the computer will not be protected from unwanted interventions. The password entered is then detectable using system resources.

11.2 Applications

In the Applications tab in the dialogue window Settings 81 you can define parameters for the ProCop Toolbar application.

Parameters when starting the ProCop Toolbar:

- Permit multiple launches - allow the Toolbar to be launched several times, which can be necessary during network access on several monitoring systems
- View full screen - launches the monitoring system in full-screen mode; no Windows operating components are available, as the whole desktop is used
- Forbid minimising of the Toolbar - the toolbar cannot be minimised, it will always be visible on the desktop
- View only basic functions in the monitor - in the advanced menu the Toolbar will only display basic or all the advanced functions according to the currently logged in user
- Display Monitor/Monitor separate windows/Designer on startup - upon launching the ProCop Toolbar the appropriate preset mode is displayed

Other parameters:

- Close the project when exiting in Designer mode - this option is suitable for developers who automatically also close the project on the server when finishing monitoring in Designer mode
- System language - allows the ProCop Toolbar language to be chosen, or Windows Auto, which automatically selects the language of the closest language of the operating system

Tip!
The Original button allows you to set applications in the basic settings after installation.

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11.3 Access Permissions

In the tab Access permissions in the dialogue window Settings 81 you can define parameters for ProCop Toolbar access permissions.

Settings for client behaviour with access permissions:

- Login dialogue upon starting - after launching the ProCop Toolbar the login dialogue 67 is automatically displayed to verify access permissions
- Login dialogue with insufficient rights - switches on the option of automatic opening of the login dialogue when selecting an event for which the user currently logged in does not have sufficient access permissions
- Automatic login as the user Everyone - after logging out the user, or prior to the first login, the user Everyone is automatically logged in
- Automatic logout after being inactive for a defined period - if no actions are made after a defined period (seconds, minutes, hours), then the user is logged out. Zero means that the automatic logout is not implemented.
- Use the user from Windows for monitoring - implements automatic login of the Windows user to the monitoring system as well, if defined with the same name. If the user left in the system is an Administrator without a password, the system does not implement login or leave the Administrator logged in.

Tip!

If you use login to Windows under a username, define the same named user to the ProCop monitoring system and switch on the option Use Windows user for monitoring. After logging in to the computer, you will be automatically logged in to the monitoring system as well.

Tip!

The Original *button allows you to set applications in the basic settings after installation.*

11.4 Other Settings

In the tab Other in the dialogue window Settings 81 you can preset the directory for archiving the monitoring project. This directory will be offered by default in the archiving window of the technological project.
The Search button allows you to select the folder using the system dialogue window.

Tip!

The Original *button allows you to set applications in the basic settings after installation.*

11.5 Data Server

In the tab Data server in the dialogue window Settings 81 you can set up automatic opening of the technological project on starting monitoring and later opening the data project.

Options for settings of the data server:

- Automatically open the last project (only for the service) - after opening the project from the ProCop Toolbar, the given project is saved in the settings of the data server and will be automatically opened again when the service is next launched. This option is not functional with installation for developers 9
- Delay after startup (only for the service) - delays opening and launching of the project by a defined amount of time, e.g. to wait for the drivers of the necessary devices, OPC servers, etc. to launch
- Project - the whole path to the monitoring project which is to be opened (launched), the Search button allows you to select the file using the system dialogue window

Important warning!

Incorrect changes to the settings of the functional monitoring system may result in the monitoring not working, which can occur after the computer is restarted.

Tip!

The Original *button allows you to set applications in the basic settings after installation.*

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11.6 Trend Server

In the tab Trend server in the dialogue window Settings 81 you can set parameters for the trend server.
Data files for the trend server, project and delay:

- Automatically open the last project - open the last project - after opening the project in the data server the given project of the trend server saves the settings and it will be automatically opened again when the trend server is next launched.
- Delay after startup (only for the service) - delays opening and launching of the project by a defined amount of time, e.g. due to decreasing the load on the computer when starting the system
- Project - the whole path to the trend server project which is to be opened, the Search button allows you to select the file using the system dialogue window

Setting server parameters:

- Delete the trend tree on every launch - this option restricts accumulation of old trends which have already been removed from the project; they will no longer be displayed in the trend browser 39 in the tree, but trends existing in the data project will still be available
- Save cache on exit - samples which have been added to the data server and have not yet been put in the appropriate trends are saved in the temporary memory, i.e. the cache. This memory is suitable when exiting the trend server to save to the hard drive and when the trend server is launched again with the given project you can fetch it - there will be no loss of previously scanned samples, e.g. on restarting the computer.
- Save the cache every 5 minutes - samples in the cache are saved automatically to the hard drive with a five-minute periodicity, to prevent their loss in the event of, for example, a power failure
- Allocate files in the full length - database files of continuous historical trends are created in the maximum length that can be needed even the first time it launches. This database will no longer grow, thereby decreasing disk fragmentation and disk space cannot run out when recording trends during monitoring
- Test files on startup - Never/Existence/Open/Read - on launching the trend server and opening the project with the defined method, they test and repair the database which could be damaged, for example during a power failure. With more detailed tests, reliability increases, but the time for testing increases (unavailability of trends on system startup). Newly arriving samples are saved in the cache during the testing.
- Index block starts - this option adds an index database to speed up viewing of huge volumes of sample, but increases demand on the disk space for trends to double.

Tip!
The Original button allows you to set applications in the basic settings after installation.

11.7 Alarm Server

In the tab Alarm server in the dialogue window Settings 81 you can set parameters for the alarm server.
Data files of the trending trend, project and delay:

- Automatically open the last project - after opening the project in the data server the given project of the alarm server saves the settings and it will be automatically opened again when the alarm server is next launched
- Delay after startup (only for the service) - delays opening and launching of the project by a defined amount of time, e.g. due to decreasing the load on the computer when starting the system
- Project - the whole path to the alarm server project which is to be opened, the Search button allows you to select the file using the system dialogue window

Setting server parameters:

- Maximum number of alarms - allows you to set the maximum number of continuous alarms; alarms are archived daily and none can be lost
- Delay when closing the database - the parameter defines the delay upon arrival of an alarm, after which the database is automatically closed and saved to the hard drive. This eliminates loss of data during any power failure.

Tip!
The Original button allows you to set applications in the basic settings after installation.

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11.8 Toolbar Identity

In the tab Identity in the dialogue window Settings 81 you can set the user under whose permissions the ProCop Toolbar will run. By default upon installation, a ProCop local user is created with administrator permissions, a machine generated undisclosed password and an identity entered in this tab.

Setting identity in the ProCop Toolbar:

- Launch ProCop as another user - this option allows you to change the identity of the toolbar process when launching as below
- Username - the ProCop Toolbar is launched under the set name of the local or domain user
- Domain - the domain of the local computer, point, or blank text for a local user, or the domain name for a domain user
- Access password - the password for logging in the above user is entered here

Important warning!

Incorrect changes to the settings of the functional monitoring system may result in the monitoring not working, which can occur after the computer is restarted.

Tip!

The Original *button allows you to set applications in the basic settings after installation.*

11.9 Web: Access Privileges

In the tab Web: Access Permissions in the dialogue window Settings 81 you can set the computer name with remote server access permissions (blank for the local computer), configure parameters for web access and logging access from the web.

Remote server access rights:

- Computer name - name of the computer where standard monitoring with the server of access permissions is installed; this does not have to be on the same computer as the web server
- Using Find you can select a neighbouring computer
- If monitoring and the web server are on the same computer, the computer name is not filled in

Configuration of access:

- Period of maintaining the connection - the time set is reserved by settings for the connected user from the web browser even after closing the website (min. 30 seconds)
- Allow setting of values immediately upon startup - this option allows settings of values immediately after starting the system; it is suitable to switch on when installing the WebControl extension

Logging directory:

- File directory LOG - all access from the web browser can be recorded in the system in the files of a selected directory. Using Find you can select it easily

Setting logging

Further options allow you to switch on/off the record of access to a given type of web extension and set the values. The actual value setting is also always recorded in the events of classic monitoring with the identity of the user who entered the settings.

Setting logging:

- Login and logout
- Viewing technological screens
- Setting technological variables
- Viewing graphic trends
- Viewing text trends
- Viewing alarms

11.10 Web: WebView

In the tab Web: WebView in the dialogue window Settings 81 you can set the computer name with a remote data server (blank for the local computer), configure access parameters from the web and set display validity.

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Remote data server:

- Computer name - name of the computer where standard monitoring with the data server is installed; this does not have to be on the same computer as the web server
- If monitoring and the web server are on the same computer, the computer name is not filled in

Name of the visual project for the Web:

- For the web extension, you can create a special visual project with other technological displays than in standard monitoring. The name of such a project must be entered accurately into this item
- If the web visualisation is supposed to match the standard one, the name of the visual project should be left blank

Setting displays:

- Display directory (cache) - all displays, provided to web browsers, are saved in a file, as an image into the directory set here. Using Find you can select it easily.
- Period of display validity (cache) - all web browsers (users), which request the same technological display by the set time after saving it in the file receive a pre-created image. After the display validity period has expired, the image is created again with the current values. The longer the period, the lower the strain on the monitoring computer and web server during concurrent access by a larger number of users.
- The refresh period of the website (display) - each browser automatically requests the image of the technological display once this period has expired. This period should always be larger than the period of validity of the display, so the same user is not provided the same image again - an unnecessary transfer

11.11 Web: WebTrends

In the tab Web: WebTrends in the dialogue window Settings 81 you can set the computer name from the remote trend server (blank for a local computer).

Remote trend server:

- Computer name - name of the computer where standard monitoring with the trend server is installed; this does not have to be on the same computer as the web server
- Using Find you can select a neighbouring computer
- If monitoring and the web server are on the same computer, the computer name is not filled in.

11.12 Web: WebAlarms

In the tab Web: WebAlarms in the dialogue window Settings 81 you can set the computer name with the remote alarm server (blank for a local computer).

Remote alarm server:

- Computer name - name of the computer where standard monitoring with the alarm server is installed; this does not have to be on the same computer as the web server
- Using Find you can select a neighbouring computer
- If monitoring and the web server are on the same computer, the computer name is not filled in.

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